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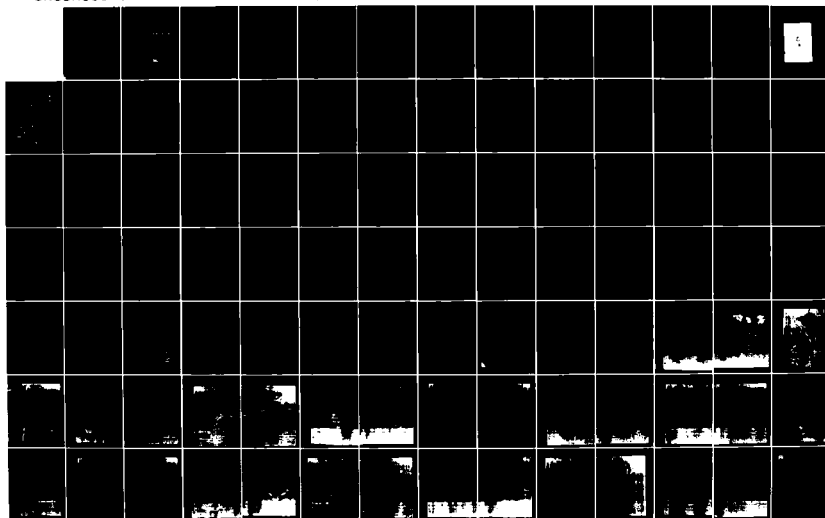
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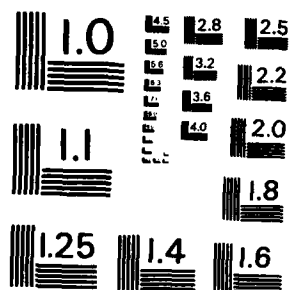
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**CONNECTICUT RIVER BASIN
WEST HARTFORD, CONNECTICUT
TALCOTT RESERVOIR DAM**

MAIN DAM CT 00490

DIVERSION DIKE CT 00489

DIKE NO. 2 CT 01710

**PHASE 1 INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM**

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**DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS**

MAY, 1981

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4. TITLE (and Subtitle) Talcott Reservoir Dam, Main Dam; Diversion Dike; Dike No. 2. NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS		5. TYPE OF REPORT & PERIOD COVERED INSPECTION REPORT
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19. KEY WORDS (Continue on reverse side if necessary and identify by block number) DAMS, INSPECTION, DAM SAFETY, Connecticut River Basin West Hartford, Connecticut		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This flood control project consists of three structures: the Main Dam, the Diversion Dike and Dike No. 2. Each structure is an earth embankment at 3H:1V with a good grass cover and a top width of 12 feet. Based on the visual inspection, review of design information and past operational performance, these structures are judged to be in GOOD condition. These structures are classified as INTERMEDIATE in size and HIGH hazard potential structures. The test flood is the PMF.		



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO
ATTENTION OFFICE

JUL 09 1981

NEDED

Honorable William A. O'Neill
Governor of the State of Connecticut
State Capitol
Hartford, Connecticut 06115

Dear Governor O'Neill:

Inclosed is a copy of the Talcott Reservoir Dam, Main Dam (CT-00490), Diversion Dike (CT-00489) and Dike No. 2 (CT-01710) Phase I Inspection Report, prepared under the National Program for Inspection of Non-Federal Dams. This report is based upon a visual inspection, a review of the past performance and a brief hydrological study of the dam. I approve the report and support the findings and recommendations described in Section 7 and ask that you keep me informed of the actions taken to implement them. This follow-up action is vitally important.

Copies of this report have been forwarded to the Department of Environmental Protection. Copies will be available to the public in thirty days.

I wish to thank you and the Department of Environmental Protection for your cooperation in this program.

Sincerely,

C. E. EDGAR, III
Colonel, Corps of Engineers
Commander and Division Engineer

Incl
As stated



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CONNECTICUT RIVER BASIN
WEST HARTFORD, CONNECTICUT

TALCOTT RESERVOIR DAM

MAIN DAM CT 00490
DIVERSION DIKE CT 00489
DIKE NO. 2 CT 01710

PHASE 1 INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

NATIONAL DAM INSPECTION PROGRAM

PHASE I - INSPECTION REPORT

Identification No.: CT 00489 (Diversion Dike)
CT 00490 (Main Dam)
CT 01710 (Dike No. 2)

Name of Dam: Talcott Reservoir Dam

Town: West Hartford

County and State: Hartford County, Connecticut

Stream: Tributary to Trout Brook

Date of Inspection: November 17, 1980

BRIEF ASSESSMENT

This flood control project consists of three (3) structures: the Main Dam, the Diversion Dike and Dike No. 2. Each structure is an earth embankment at 3H:1V with a good grass cover and a top width of 12 feet.

Principal dimensions of these three structures are as follows:

Structure	Length (ft.)	Height(ft.)
Main Dam	1300	30
Diversion Dike	3125	30
Dike No. 2	210	18.5

The Diversion Dike is located 3000 feet north of the Main Dam; while Dike No. 2 lies 600 feet east of the Diversion Dike.

The principal spillways consist of a reinforced concrete riser and 30 inch RCP through the Main Dam and Diversion Dike. The emergency spillways are grassed channels, 40 feet wide in the eastern 1/3 of the Main Dam and 90 feet wide at the eastern end of the Diversion Dike. The reservoir is normally empty except for small sediment pools at the principal spillway inlets. These structures are owned by the State of Connecticut, Department of Environmental Protection.

Based on the visual inspection, review of design information and past operational performance, these structures are judged to be in GOOD condition. There is some erosion due to vehicle trespass, some sloughing of the embankments, and animal burrows.

These structures are classified as INTERMEDIATE in size and HIGH hazard potential structures in accordance with the Recommended Guidelines for Safety Inspection of Dams, by the Corps of Engineers. The impoundment storage at the top of the structures is 1205 ac.-ft.

Failure of any of the embankments could result in the possible loss of more than a few lives and extensive economic damage to numerous homes and buildings along the downstream channel in West Hartford. Depths of inundation at these homes and buildings may range from 2 to 10 feet in the event of failure of the Main Dam, from 4 to 12 feet in the event of failure of the Diversion Dike, and from 1 to 3 feet in the failure of the Dike No. 2.

The test flood is the Probable Maximum Flood (PMF). The test flood has an inflow equal to 4050 cfs and an outflow discharge equal to 2670 cfs at a stillwater elevation of 456.2 which will not overtop the dam (1.8 feet freeboard). The maximum outflow capacity of the spillways with the water level at the top of the dam is 5400 cfs, which is 203 percent of the test flood outflow.

It is recommended that the following items be studied further by a qualified registered engineer: Investigate the cause of the holes at the outlet end of the emergency spillway and design repairs as necessary (Main Dam). Investigate the low spot in the top of the embankment in the vicinity of the bend between Stations 22 and 23 and design repairs as necessary (Diversion Dike). Investigate the discharge adequacy of the drainage channel which runs along the upstream side of the embankment along that portion adjacent to Route 44 (Diversion Dike). Investigate the erosion and sloughing around the outlet pipe and design repairs as necessary (Diversion Dike). Investigate the minor sloughing in the wet area at the downstream toe of the embankment in the vicinity of Station 8 and design repairs as necessary (Diversion Dike). The reservoir should be visited when flood waters are being impounded to check for problem areas (general).

The following remedial measures should be taken by the owner: Repair of minor sloughing at the outlet and monitoring of seepage through the riprap at the outlet of the Main Dam. Repair of the erosion at the vent, removal of the brush from the riprap at the outlet and clear brush from the drainage channel along the upstream face adjacent to Route 44, at the Diversion Dike. Recreational vehicle access should be eliminated, vehicle ruts should be repaired, animal burrows should be filled, the semi-annual inspections continued, and the existing flood emergency plan amended to provide downstream warning procedures.

Recommendations and remedial measures that should be implemented within one year or two years, as noted, of receipt of this Phase I Inspection Report are further described in Section 7.

JAMES P. PURCELL ASSOCIATES, INC.

Sudhir A. Shah

Sudhir A. Shah, P.E.
Director of Engineering
Connecticut P.E. No. 8012



PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation. However, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the spillway test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and downstream damage potential.

The Phase I Investigation does not include an assessment of the need for fences, gates, no-trespassing signs, repairs to existing fences and railings and other items which may be needed to minimize trespass and provide greater security for the facility and safety to the public. An evaluation of the project for compliance with OSHA rules and regulations is also excluded.

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OVERVIEW PHOTO - TALCOTT RESERVOIR DAM

PHOTO TAKEN DECEMBER 15, 1980

NATIONAL DAM INSPECTION PROGRAM

PHASE I - INSPECTION REPORT

**NAME OF DAM: TALCOTT RESERVOIR DAM
(Main Dam, Diversion Dike, Dike No. 2)**

SECTION 1

PROJECT INFORMATION

1.1 General

a. Authority:

Public Law 92-367, August 8, 1972, authorized the Secretary of the Army through the Corps of Engineers to initiate a national program of dam inspections throughout the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region. James P. Purcell Associates, Inc. has been retained by the New England Division to inspect and report on selected dams in the State of Connecticut. Authorization and notice to proceed was issued to James P. Purcell Associates, Inc., under a letter from William E. Hodgson, Jr., Colonel, Corps of Engineers. Contract No. DACW33-81-C-0009 has been assigned by the Corps of Engineers for this work.

b. Purpose:

1. Perform technical inspection and evaluation of non-federal dams to identify conditions which threaten the public safety and thus permit correction in a timely manner by non-federal interests.
2. Encourage and prepare the States to initiate quickly, effective dam safety programs for non-federal dams.
3. To update, verify and complete the National Inventory of Dams.

1.2 Description of Project

a. Location:

The Talcott Reservoir structures are located in the Town of West Hartford, Hartford County, Connecticut (See Plate No. 1).

The Diversion Dike is located on the south side of U.S. Route 44, approximately 2.8 miles east of the village of Avon. The dike is built across a tributary to Trout Brook and is located 4.4 miles upstream of the confluence with Trout Brook. The dike is at latitude 41°-47'-14" and longitude 72°-47'-06".

The Main Dam is located approximately 3000 feet due south of the Diversion Dike. The dam is built across a tributary to Trout Brook and is located 1700 feet upstream of Hartford Reservoir No. 2. The dam is at latitude 41°-46'-42" and longitude 72°-47'-10".

The Dike No. 2 is located across a small valley approximately 600 feet east of the east end of the Diversion Dike. The dike does not cross a water course but is used to contain flood waters within the reservoir. It is located at latitude 41°-47'-10" and longitude 72°-47'-10".

Trout Brook is a tributary to the south branch of the Park River which flows through Hartford, Connecticut to the Connecticut River.

All elevations used in this report are based on the Metropolitan District Commission (MDC) Datum, except as noted. The MDC Datum minus 2.08 feet equals the National Geodetic Vertical Datum (NVGD).

b. Description of Dam and Appurtenances:

The Talcott Reservoir Project consists of a Main Dam, a Diversion Dike and the Dike No. 2. They are all earth embankments with good grass covers, a top width of 12 feet at elevation 458.0 and side slopes of 3H:1V.

The Main Dam is 1300 feet long and 30.0 feet high. It has an embankment and foundation drain along the downstream toe in the vicinity of the outlet. The Main Dam is unzoned compacted earth fill with a 12 foot wide cutoff trench.

The Diversion Dike is 3125 feet long and 30.0 feet high. It has an embankment and foundation drain along the downstream toe in the vicinity of the outlet and at the northern end of the dike. Approximately 1200 feet of the dike was constructed partially of rockfill with an impervious upstream face and top. There is a two layer granular filter on the upstream face of the rockfill. The remainder of the dike is unzoned compacted earth fill. There is a 12 foot wide cutoff trench.

The Dike No. 2 is 210 feet long and 18.5 feet high. It has a filter blanket seepage drain along the downstream toe. There is a 12 foot wide cutoff trench.

The outlet works consist of a principal spillway and an emergency spillway at the Main Dam and the Diversion Dike. There are no outlet works at the Dike No. 2. Both principal spillways consist of reinforced concrete risers and a 30 inch reinforced concrete pipe extending from the riser, through the embankments, to a free outlet at the downstream face. Flow into these 30 inch pipes is restricted by steel oriface plates attached to the upstream end of the pipes. This was done in order to achieve the desired outflow rates with use of the 30 inch pipes required for internal inspection. The crest of the risers are at elevation 435.0 and are protected by angle iron trash racks. The pipes are vented by a 4 inch diameter steel pipe extending to elevation 452.5. There are no drains into the risers and the small sediment pools cannot be emptied.

The emergency spillways are grassed earth channels at the eastern end of the Diversion Dike and the eastern third of the Main Dam. The crests of the spillways are 30 foot long level sections at elevation 452.5. The bottom widths are 40 feet at the Main Dam and 90 feet at the Diversion Dike, and the side slopes are 3H:1V. The lengths of the spillways are 300 feet at the Main Dam and 500 feet at the Diversion Dike.

c. Size Classification:

The size classifications of all three structures are INTERMEDIATE as per criteria set forth in the Recommended Guidelines for Safety Inspection of Dams by the Corps of Engineers. The impoundment storage at the top of all three structures is 1205 acre-feet (within the range of 1000 to 50,000 ac.-ft.). The maximum height of the Main Dam is 30.0 feet (within the range of 25 to 40 feet-small classification), of the Diversion Dike is 30.0 feet (within the range of 25 to 40 feet-small classification) and of the Dike No. 2 is 18.5 feet (range 25 to 40 feet-small classification). The size classifications of these structures is based on the impoundment storage criteria.

d. Hazard Classification:

The hazard classifications for all three structures are HIGH as per the criteria set forth in the Recommended Guidelines for Safety Inspection of Dams, by the Corps of Engineers.

In the event of failure of any of the structures, numerous homes and buildings in an urbanized area of West Hartford could suffer excessive damage. The potential exists for the loss of more than a few lives at numerous downstream homes.

Depths of inundation at these homes and buildings may range from 2 to 10 feet in the event of failure of the Main Dam, from 4 to 12 feet in the event of failure of the Diversion Dike, and from 1 to 3 feet in the failure of the Dike No. 2. No homes would be inundated by pre-failure flows. These homes and buildings range from approximately 0 to 10 feet above normal brook levels.

e. Ownership:

The Talcott Reservoir structures are presently owned and maintained by: The State of Connecticut, Department of Environmental Protection.

f. Operator:

The person in charge of maintenance of the structures is:

Mr. Anthony Cantele
Regional Director, Region I
Conservation and Preservation Division
Department of Environmental Protection
P.O. Box 161
Pleasant Valley, Connecticut 06063
Telephone: (203) 379-0771

g. Purpose:

These floodwater retarding structures provide flood protection to the flood plain on the South Branch of the Park River.

h. Design and Construction History:

The design of the project was completed by the Soil Conservation Service in 1963 and construction was completed in 1964.

i. Normal Operating Procedures:

There are no day-to-day operational procedures for these structures. The reservoir is normally empty except for small sediment pools around the principal spillway risers and all flow is discharged through the two principal spillways.

1.3 Pertinent Data

a. Drainage Area:

The Talcott Reservoir drainage basin is irregular in shape with a total drainage area of 1.6 square miles (see drainage area map in Appendix D). The topography is generally rolling terrain with elevations ranging from a high of 820 feet to a low of 435.0 feet at the principal spillway crests. Stream and basin slopes are moderate, 5 percent and 10 percent, respectively. The sediment pools occupy a negligible portion of the watershed, however, approximately 25 acres between the Main Dam and Diversion Dike consist of a shallow swamp at elevation 435.0.

b. Discharge at Dam Site:

There are no specific discharge records available. Listed below are calculated discharge values of the emergency spillways and outlet works (30 inch principal spillways).

1. Outlet Works: Two 30 inch pipes with inverts at elevation 431.0 and a total discharge capacity of 120 cfs at elevation 452.5.
2. Maximum known discharge at dam site: Unknown.
3. Ungated spillway capacity at top of dam: 1760 cfs (Main Dam) and 3500 cfs (Diversion Dike) at elevation 458.0.
4. Ungated spillway capacity at test flood elevation: 860 cfs (Main Dam) and 1680 cfs (Diversion Dike) at elevation 456.2.
5. Gated spillway capacity at normal pool elevation: N/A
6. Gated spillway capacity at test flood elevation: N/A
7. Total spillway capacity at test flood elevation: 860 cfs (Main Dam) and 1680 cfs (Diversion Dike) at elevation 456.2.
8. Total project discharge at top of dam: 5400 cfs at elevation 458.0.
9. Total project discharge at test flood level: 2670 cfs at elevation 456.2.

c. Elevation (Feet Above MDC Datum):

1. Stream bed at toe	428.0 (Main Dam) 428.0 (Diversion Dike) 439.5 (Dike No. 2)
2. Bottom of cutoff	428.0 (Main Dam) 425.5 (Diversion Dike) 439.5 (Dike No. 2)
3. Maximum tailwater	Unknown
4. Normal pool	435.0
5. Full flood control pool	452.5
6. Spillway crest	452.5 (emergency spillway)
7. Design surcharge	455.4
8. Top of dam and dikes	458.0
9. Test flood level	456.2

d. Reservoir (Length in Feet):

1. Normal pool	3000
2. Flood control pool	3000
3. Spillway crest pool	3000 (emergency spillway)
4. Top of dam and dikes	3000
5. Test flood pool	3000

e. Storage (acre-feet):

1. Normal pool	25±
2. Flood control pool	826
3. Spillway crest pool	826 (emergency spillway)
4. Top of dam and dikes	1205
5. Test flood pool	1086

f. Reservoir Surface (acres):

1. Normal pool	24.2
2. Flood control pool	65.7
3. Spillway crest	65.7 (emergency spillway)
4. Test flood pool	73
5. Top of dam and dikes	80.5

g. Dam and Dikes:

1. Type	Earth embankments
2. Length	1185 (Main Dam) 2860 (Diversion Dike) 210 (Dike No. 2)
3. Height	30 feet (Main Dam) 30 feet (Diversion Dike) 18.5 feet (Dike No. 2)
4. Top width	12 feet
5. Side slopes	3H:1V
6. Zoning	Unzoned compacted earth fill. Also rockfill on portions of Diversion Dike.
7. Impervious Core	None
8. Cutoff	12 foot wide cutoff trenches
9. Grout curtain	None
10. Other	- -

h. Diversion and Regulating Tunnel:

N/A

i. Spillway

(emergency spillway)

1. Type	Grassed channel
2. Width of channel	40 feet (Main Dam) 90 feet (Diversion Dike)
3. Crest elevation	452.5

- | | |
|----------------|-----------------|
| 4. Gates | None |
| 5. U/S Channel | Grassed channel |
| 6. D/S Channel | Grassed channel |
| 7. General | Good condition |

j. Regulating Outlets: (principal spillways)

Refer to Paragraph 1.2b - "Description of Dam and Appurtenances" for description of Outlet Works.

	Main Dam	Diversion Dike
1. Invert	431.0	431.0
2. Size	30 inch	30 inch
3. Description	Reinforced concrete pipe	Reinforced concrete pipe
4. Control mechanism	None	None
5. Other	Steel oriface plate	Steel oriface plate
	Riser Crest: Elevation: 435.0	Riser Crest: Elevation: 435.0

SECTION 2

ENGINEERING DATA

2.1 Design

The available design data consists of the following documents and plans prepared by the Soil Conservation Service.

- a. "As-built" drawings of the construction plans, Talcott Reservoir Dam, 1963. Copies of these plans are included in Appendix B-3.
- b. Original design calculations and report.
- c. Stage-storage, stage-reservoir area, and stage-discharge curves.
- d. Information storage and retrieval form.

Refer to Appendix B-1 for location of this material.

2.2 Construction

The SCS provided inspection during construction of the structures, which was completed in 1964. The SCS has construction inspection reports in storage. These reports were not reviewed in the preparation of this Phase I Inspection Report.

2.3 Operation

There is no day-to-day operational procedures. The site is visually inspected semi-annually by the State of Connecticut. Inspection records are available from the owners.

2.4 Evaluation

a. Availability:

All information concerning these structures was gathered by field investigation and meetings with the Soil Conservation Service and from the files of the Department of Environmental Protection, Water Resources Unit, Dam Safety Engineers, State Office Building, Hartford, Connecticut.

b. Adequacy:

The information that was available complimented a complete visual inspection of this facility and is adequate at this time.

c. Validity:

The engineering design data provided by the SCS has been deemed adequate for the purpose of this Phase I Inspection Report. The as-built plans appear to adequately represent the present configuration of the structures based upon the visual inspection. This investigation did not include a detailed engineering check of the SCS design file.

SECTION 3
VISUAL INSPECTION

3.1 Findings

a. General:

The visual inspection of the Talcott Reservoir Structures was conducted on November 17, 1980 and a copy of the visual inspection check list is contained in Appendix A of this report.

The following procedure was used:

1. Inspection of the upstream reservoir area which would be impounded by the dam and dikes.
2. Visual inspection of the face and top of the dam, dikes and spillways for cracks, settlement, seepage, etc.
3. Inspection of the outlet works and other appurtenances as to their existence, location and operability.
4. Review of procedures that could be utilized in the event of an emergency situation.
5. A check of the downstream area for seepage, piping, boils or other indications of abnormal conditions. The downstream hazard potential in the event of dam or dike failure was investigated.
6. Photographs of the general area of the dam and of specific items of note were taken and are included in Appendix C of this report.

Before the inspection, the available existing data was studied and reviewed.

b. Main Dam and Appurtenant Structures:

1. Crest: The dam consists of an earth embankment with no evidence of misalignment or settlement. The top of the dam is 12 feet wide and contains a grassed service road. There are wheel ruts and foot paths along the top of the dam, but no bare earth is exposed (Photo C-1).
2. Upstream Face: The upstream face consists of a grassed earth slope (Photos C-2, C-4). Only a few

small animal burrows, approximately 1 inch in diameter, were noted. Some slightly larger animal burrows were noted in the upstream toe approximately 100-150 feet west of the emergency spillway.

3. **Downstream Face:** The downstream face is an earth slope with a good grass cover (Photo C-3). Numerous large animal burrows were noted all along the toe of the embankment. These burrows were up to 6 inches in diameter. There are several large holes associated with animal burrows at the joint between the embankment and west emergency spillway embankment. The largest of these is shown in Photo C-7 and is approximately 2 feet in diameter. Minor sloughing is occurring around the outlet pipe.
4. **Principal Spillway:** The principal spillway consists of reinforced concrete riser and uncontrolled 30 inch reinforced concrete pipe extending through the dam. These concrete structures are in good condition. The inside dimensions of the riser are 3.5 feet by 4 feet. The riser is protected by an angle iron trash rack (Photo C-8). The pipe outlets to a riprap stilling pool (Photo C-10). There is standing water in the riprap at the outlet (Photo C-9) which is approximately 1 foot higher than the stilling pool.
5. **Emergency Spillway:** The emergency spillway is a 40 foot wide grassed channel with side slopes of 3H:1V and is approximately 300 feet long (Photo C-5). There are vehicle ruts with some bare earth in places on the floor and sides of the channel.

Several large holes were noted in the floor of the channel at the downstream end (Photo C-6). These appear to contain animal burrows at the bottom. The largest hole is 3 feet deep and approximately 7 feet by 10 feet wide. The downstream floor of the spillway ends at a 2H:1V slope down to existing woodland. This slope is vegetated with brush and small trees. The spillway floor appears to have been extended downstream in this area (Overview Photo).

c. Diversion Dike and Appurtenant Structures:

1. **Crest:** The dike consists of an earth embankment with no evidence of misalignment (Photos C-11, C-16, C-17). There is an area of possible settlement (8 inches maximum) of the upstream edge of the top of the dike at approximately Station

22+50. There are wheel ruts all along the top with bare earth in places (Photo C-12). The top width is 12 feet.

2. Upstream Face: The upstream face is a grassed earth slope (Photos C-11, C-15, C-17). An erosion gully (up to 1.0 foot deep by 1.5 feet wide) has formed below a concrete pad next to the principal spillway vent inlet (Photo C-19).

There is an overgrown channel along the upstream side of the dike at the northern end which carries water from north of Route 44 into the reservoir (Photo C-11). The upper portion of this channel is higher than the top of the dike and it appears possible that high discharges could flow both in the channel and over the top of the dike. The as-built plans indicate a 10 foot wide trapezoidal channel approximately 2 to 3 feet deep.

3. Downstream Face: The downstream face is a grassed earth slope (Photos C-14, C-16). There is an area of possible seepage (no visible flow) and minor sloughing at the base of the embankment at approximately Station 8 (Photo C-13). There are numerous small animal burrows and riprap outcrops along the rockfill area between Stations 10 and 22 (Photo C-14). Sloughing is occurring at the riprap around the principal spillway outlet (Photo C-21).
4. Principal Spillway: The principal spillway consists of a reinforced concrete riser and uncontrolled 30 inch reinforced concrete pipe extending through the Dike. These concrete structures are in good condition. The inside dimensions of the riser are 3.5 feet by 4 feet. The riser is protected by an angle iron trash rack (Photo C-20). The pipe outlets to a riprap stilling pool (Photo C-22).
5. Emergency Spillway: The emergency spillway is a 90 foot wide grassed channel with side slopes of 3H:1V and is approximately 500 feet long (Photo C-18). There are vehicle ruts on the floor and sides of the channel (Photo C-17). There is a damp area with cattails in the floor along the toe of the eastern embankment near the downstream end. This is probably due to groundwater seepage from the hillside in which the easterly spillway wall was excavated. Although damp, no moving water was noted in this area during the inspection.

d. Dike No. 2:

1. Crest: The dike consists of an earth embankment with no evidence of misalignment or settlement (Photo C-23). The top is 12 feet wide and contains only minor wheel paths.
2. Upstream Face: The upstream face is a grassed earth slope (Photo C-24). No animal burrows or erosion were noted.
3. Downstream face: The downstream face is a grassed earth slope (Photo C-23). No animal burrows or erosion were noted.

e. Reservoir Area:

There is no permanent reservoir except for small sediment pools at each principal spillway inlet. The majority of the reservoir area is woodland. There is a 25 acre swamp between the Main Dam and Diversion Dike (Overview Photo). No unusual geological features were noted that could be expected to adversely affect the embankments or appurtenant structures.

f. Downstream Channel:

The downstream channels consist of short excavated earth channels which extend to existing streams (Photo C-10, Main Dam) (Photo C-22, Diversion Dike).

3.2 Evaluation

Based on the visual inspection, the Talcott Reservoir structures appear to be in GOOD condition overall and there were no major areas of distress noted. Specific areas of concern that were noted are:

- a. The erosion due to vehicle trespass.
- b. The animal burrows in the embankments.
- c. The apparent inadequacy of the discharge capacity of the channel at the north end of the Diversion Dike.
- d. The sloughing of the downstream face of the Diversion Dike around the outlet and the minor sloughing near Station 8.
- e. The holes in the downstream end of the emergency spillway at the Main Dam.

It should be noted that this floodwater retarding reservoir was not filled at the time of inspection and

thus the adequacy of the structure with regard to the functioning of the blanket and toe drain and also with regard to potential seepage problems could not be fully assessed. The reservoir should be visited by a qualified registered engineer when floodwaters are being impounded to check for problem areas. A record of maximum water levels should be kept for reference purposes.

SECTION 4

OPERATIONAL AND MAINTENANCE PROCEDURES

4.1 Operational Procedures

a. General:

There are presently no formal operational procedures for this facility.

b. Description of Any Warning System in Effect:

There is a formal written "Flood Emergency Plan" in effect for this facility. During a flood "watch", the structures are inspected to insure that the outlets are clear and free of debris. During a flood "warning", State personnel visit the site periodically (2-3 hours) and report on unusual situations. In the event of an emergency situation, the field inspector would call the State Dam Safety Engineer and a decision would be made as to further action to be taken. A copy of the applicable portions of this flood emergency plan is included in Appendix B.

4.2 Maintenance Procedures

a. General:

The grass cover is mowed on an annual basis. Other maintenance such as painting the track racks and repairing erosion areas is performed on an "as needed" basis based on the findings of the semi-annual inspections.

b. Operating Facilities:

Maintenance of the principal and emergency spillways is as described above in Paragraph 4.2a.

4.3 Evaluation

The operational and maintenance procedures are generally satisfactory, but there are areas requiring improvement.

The formal written flood emergency plan should be amended to include downstream warning procedures.

SECTION 5

EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES

5.1 General

The Talcott Reservoir structures will create an impoundment with a total storage capacity of 826 ac.-ft. at elevation 452.5, the emergency spillway crest elevation. Each foot of depth in the reservoir above the emergency spillway crest can accommodate approximately 66 ac.-ft. The emergency spillways are grassed earth channels with a total width of 130 feet and a crest 5.5 feet below the top of the dam. The drainage area is 1.61 square miles and stream and basin slopes are moderate, 5 percent to 10 percent, respectively.

5.2 Design Data

- a. Original design data (Standard SCS Design Methods) is available for this watershed and the structures of the Talcott Reservoir. To verify existing design information, USGS topographic maps (Scale 1" = 2000') were utilized to develop hydrologic parameters such as drainage area, basin length, time of concentration, and other runoff characteristics. Surface area and storage values were verified and taken from the original design data. Some of the pertinent hydraulic design data was confirmed by actual field measurements at the time of visual inspection.
- b. The original design discharge for the facility is 1780 cfs with a corresponding freeboard of 2.5 feet.
- c. Outflow values (routing procedures) and dam overtopping analyses were computed in accordance with the guidelines developed by the Corps of Engineers. Judgment was used in calculating final values outlined in this report, which are quite approximate and should not be considered a substitute for actual detailed analysis.

5.3 Experience Data

Historical data for recorded reservoir levels is not available for this dam.

5.4 Test Flood Analysis

Recommended Guidelines for the Safety of Dams by the Corps of Engineers were used for the selection of the "Test Flood". This project is classified as HIGH hazard and INTERMEDIATE size. Guidelines indicate that the Probable

Maximum Flood (PMF) be used as the "Test Flood" for these classifications. The watershed has a total area of 1.61 square miles. Snyder's lag was calculated to be 2.9 hours and a Snyder peaking coefficient of 0.625 was used. The 200 square mile - 24 hour Probable Maximum Precipitation (PMP) is 21.5 inches. The flood hydrograph package, HEC-1 computer program, developed by the Corps of Engineers was utilized to develop the inflow hydrograph, route the flood through the reservoir and for the dam overtopping analysis. A "Test Flood" inflow equal to the PMF was calculated to be 4050 cfs (2510 csm) and 1/2 the PMF has an inflow value of 2020 cfs (1260 csm).

The emergency spillway capacity is hydraulically adequate to pass the "Test Flood" (PMF) and overtopping of the structures will not occur. The maximum outflow capacity of the project without overtopping the structures is 5400 cfs. This corresponds to 203 percent of the test flood outflow. The maximum outflow discharge value for the "Test Flood" is 2670 cfs corresponding to a depth of flow over the emergency spillways of 3.7 feet and a freeboard of 1.8 feet. A spillway rating curve, outlet rating curve and a stage-storage curve are included in Appendix D of this report.

At the emergency spillway crest elevation of 452.5, the capacity of the two 30 inch outlet structures is 120 cfs. It will require approximately 5.5 days to empty the reservoir assuming a water surface initially at the emergency spillway crest.

The reservoir was assumed to be initially empty for the test flood analysis. It was also assumed that no blockage of the spillways occurred. The affect of tailwater was not considered.

5.5 Dam Failure Analysis

a. General:

These structures are classified as HIGH hazard structures. Failure discharge could cause damage and the possible loss of more than a few lives due to high velocities, impact from debris, and flooding to numerous residential homes and buildings along the downstream channels in West Hartford. These homes and buildings range from approximately 0 feet to 10 feet above normal brook levels.

The calculated failure discharges are 28,000 cfs (Main Dam), 57,000 cfs (Diversion Dike) and 4200 cfs (Dike No. 2) at pool levels equal to the emergency spillway crest. The assumed breach lengths are 140 feet (Main Dam), 280 feet (Diversion Dike) and 50 feet (Dike No.

2). Water surface elevations due to structure failure are listed in Appendix D on Pages D-19, D-29 and D-39.

b. Main Dam:

The pre-failure flow downstream would be the principal spillway flow of 75 cfs, corresponding to a depth of flow of approximately 2 feet. No structures would be inundated by this pre-failure flow. The failure impact area has been extended downstream 29,000 feet to North Main Street. Numerous homes in this impact area may be inundated by from 2 to 10 feet above ground level. Hartford Reservoirs Nos. 2, 5 and 1 may be overtopped by failure of the Main Dam. Additional damage is possible downstream.

c. Diversion Dike:

The pre-failure flow downstream would be the principal spillway flow of 45 cfs (lower than Main Dam flow due to orifice plates), corresponding to a depth of flow of approximately 2 feet. No structures would be inundated by this pre-failure flow. The failure impact area has been extended downstream 20,000 feet to North Main Street. Numerous homes in this impact area may be inundated by from 1 to 3 feet above ground level. Additional damage is possible downstream.

d. Dike No. 2:

There would be no pre-failure flow for the dike. The failure impact area has been extended downstream 19,000 feet to North Main Street. Numerous homes in this impact area may be inundated by from 1 to 3 feet above ground level. Additional damage is possible downstream.

SECTION 6

EVALUATION OF STRUCTURAL STABILITY

6.1 Visual Observation

a. General:

The visual inspection revealed no signs of major physical distress. It should be noted that this floodwater retarding reservoir was not filled at the time of inspection and thus the adequacy of the structures with regard to the functioning of the blanket and toe drains and also with regard to potential seepage problems could not be fully assessed.

b. Main Dam:

The earth embankment and emergency spillway appear in good general condition. The top is level and the embankment faces are well vegetated and appear stable.

There is a series of large holes on the floor of the emergency spillway near the discharge end. These range in size up to 7 feet by 10 feet in area and 3 feet deep. These large holes appear to have animal holes at their bottom. Several other large animal burrows were noted on the embankment.

c. Diversion Dike:

The earth embankment and emergency spillway appear in good general condition. The most significant visual observations related to the stability of the embankment are the apparent 8 inch low spots in the embankment crest in the vicinity of Stations 22 and 23 and the headward erosion of the toe of the embankment in the area of the 30 inch RCP outlet pipe and cradle.

d. Dike No. 2:

The earth embankment appears in good general condition. The top is level and the embankment faces are well vegetated and appear stable.

6.2 Design and Construction

The design information available consists of the design calculations and report, as-built construction plans, and construction reports. The location of this information is given in Appendix B-1.

6.3 Post-Construction Changes

There have been no post-construction changes to the structures since completion in 1964.

6.4 Seismic Stability

The structures are in Seismic Zone 1 and hence do not require evaluation for seismic stability according to the Corps of Engineers Recommended Guidelines.

SECTION 7

ASSESSMENT, RECOMMENDATIONS AND REMEDIAL MEASURES

7.1 Dam Assessment

a. Condition:

Based on the visual inspection, past performance and hydraulic/hydrologic evaluation, the Talcott Reservoir structures and appurtenances are judged to be generally in GOOD condition. Items of concern that should be addressed as a result of this inspection are listed in Sections 7.2 and 7.3

b. Adequacy:

The information available is such that the assessment of the safety of the structures should be based on the visual inspection results, the past operational performance and the design information that is available.

c. Urgency:

The recommendations and remedial measures described below should be implemented by the owner within two years after receipt of this Phase I Inspection Report, except as noted.

7.2 Recommendations

It is recommended that the owner engage a qualified registered engineer to carry out the following actions and that his recommendations be implemented.

a. Main Dam:

1. Investigate the cause of the holes at the outlet end of the emergency spillway and design repairs as necessary within one year.

b. Diversion Dike:

1. Investigate the low spot in the top of the embankment in the vicinity of bend between Stations 22 and 23 and design repairs as necessary.
2. Investigate the discharge adequacy of the drainage channel which runs along the upstream side of the embankment along that portion adjacent to Route 44 within one year.

3. Investigate the erosion and sloughing around the outlet pipe and design repairs as necessary within one year.
4. Investigate the minor sloughing in the wet area at the downstream toe of the embankment in the vicinity of Station 8 and design repairs as necessary.

c. General:

1. The reservoir should be visited when floodwaters are being impounded to check for problem areas. A record of maximum water levels should be kept for reference purposes.

7.3 Remedial Measures (Operation and Maintenance Procedures)

a. Main Dam:

1. Repair the minor sloughing in the vicinity of the outlet pipe and cradle, and cut the brush in the riprap in this area.
2. Monitor the seepage through the riprap area at the outlet pipe.

b. Diversion Dike:

1. Repair the erosion gully on the upstream face which originates from the concrete pad below the vent pipe.
2. Remove all brush from the riprapped stilling pool.
3. Clear the brush from the drainage channel along the upstream side of the embankment along that portion adjacent to Route 44.

c. General:

1. Repair vehicle tracks and footpaths on the embankments and emergency spillways.
2. During the semi-annual inspections, identify all animal burrows and repair as necessary.
3. Recreational vehicle access to the structures should be eliminated.
4. Continue the semi-annual technical inspection program.

5. The existing formal written flood-emergency plan should be amended to include downstream warning procedures.

7.4 Alternatives

There are no practical alternatives to the above stated recommendations.

APPENDIX A

INSPECTION CHECK LIST

INSPECTION CHECK LIST

PARTY ORGANIZATION

PROJECT Talcott Reservoir Dam

DATE November 17, 1980

- Main Dam
- Diversion Dike
- Dike No. 2

TIME 9:00 a.m. - 4:00 p.m.

WEATHER Partly Cloudy

W.S. ELEV. _____ U.S. _____ DN.S. _____

PARTY:

- | | |
|-------------------------------------------|-----------|
| 1. <u>R. Johnston, JPPA</u> | 6. _____ |
| 2. <u>J. Hewes, JPPA</u> | 7. _____ |
| 3. <u>J. Walsh, Baystate</u> | 8. _____ |
| 4. <u>Environmental Consultants, Inc.</u> | 9. _____ |
| 5. _____ | 10. _____ |

PROJECT FEATURE	INSPECTED BY	REMARKS
1. <u>Hydraulics</u>	<u>R. Johnston</u>	
2. <u>Structural</u>	<u>J. Hewes</u>	
3. <u>Geotechnical</u>	<u>J. Walsh</u>	
4. _____		
5. _____		
6. _____		
7. _____		
8. _____		
9. _____		
10. _____		

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980
 PROJECT FEATURE Main Dam NAME _____
 DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
<u>DAM EMBANKMENT</u>	
Crest Elevation 458.0	Good grass cover. Wheel ruts.
Current Pool Elevation 435.0	Principal spillway riser crest.
Maximum Impoundment to Date	Unknown
Surface Cracks	None observed
Pavement Condition	N/A
Movement or Settlement of Crest	None observed
Lateral Movement	None observed
Vertical Alignment	Good
Horizontal Alignment	Good
Condition at Abutment and at Concrete Structures	Good. Trees close to upstream embankment.
Indications of Movement of Structural Items on Slopes	None observed.
Trespassing on Slopes	Yes. Vehicle ruts and campfire.
Vegetation on Slopes	Good grass cover.
Sloughing or Erosion of Slopes or Abutments	Numerous animal burrows. Depression in downstream face near emergency spillway.
Rock Slope Protection - Riprap Failures	Riprap around outlet is overgrown. Minor sloughing.
Unusual Movement or Cracking at or near Toes	None observed
Unusual Embankment or Downstream Seepage	Water in riprap around outlet, 1 foot higher than outlet pool.
Piping or Boils	None observed
Foundation Drainage Features)	None observed. Plans show granular filter drains.
Toe Drains)	
Instrumentation System	None observed

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980
 PROJECT FEATURE Diversion Dike NAME _____
 DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
<u>DIKE EMBANKMENT</u>	
Crest Elevation 458.0	Good grass cover. Wheel ruts.
Current Pool Elevation 435.0	Principal spillway riser crest.
Maximum Impoundment to Date	Unknown
Surface Cracks	None observed
Pavement Condition	N/A
Movement or Settlement of Crest	Possible slight settlement (less than 8 inches) at Station 22+50.
Lateral Movement	None observed
Vertical Alignment	Good
Horizontal Alignment	Good
Condition at Abutment and at Concrete Structures	Good. Sloughing around principal spillway outlet.
Indications of Movement of Structural Items on Slopes	None observed.
Trespassing on Slopes	Yes. Vehicle ruts.
Vegetation on Slopes	Good grass cover.
Sloughing or Erosion of Slopes or Abutments	Numerous animal burrows.
Rock Slope Protection - Riprap Failures	Riprap around outlet sloughed and overgrown.
Unusual Movement or Cracking at or near Toes	Minor undulations along downstream face in rock fill areas.
Unusual Embankment or Downstream Seepage	Active seepage at downstream toe at Station 8+00.
Piping or Boils	None observed
Foundation Drainage Features)	Rock fill observed. Plans also
Toe Drains)	show granular filter drains.
Instrumentation System	None observed.

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980
 PROJECT FEATURE Dike No. 2 NAME _____
 DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
<u>DIKE EMBANKMENT</u>	
Crest Elevation 458.0	Good grass cover
Current Pool Elevation	N/A
Maximum Impoundment to Date	Unknown
Surface Cracks	None observed
Pavement Condition	N/A
Movement or Settlement of Crest	None observed
Lateral Movement	None observed
Vertical Alignment	Good
Horizontal Alignment	Good
Condition at Abutment and at Concrete Structures	Good. No structures.
Indications of Movement of Structural Items on Slopes	N/A
Trespassing on Slopes	Yes. Minor wheel ruts.
Vegetation on Slopes	Good grass cover.
Sloughing or Erosion of Slopes or Abutments	None observed.
Rock Slope Protection - Riprap Failures	N/A
Unusual Movement or Cracking at or near Toes	None observed
Unusual Embankment or Downstream Seepage	None observed
Piping or Boils	None observed
Foundation Drainage Features)	None observed. Plans show granular filter drain.
Toe Drains)	
Instrumentation System	None observed.

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980
 PROJECT FEATURE Main Dam NAME _____
 DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - INTAKE CHANNEL AND INTAKE STRUCTURE</u>	
a. Approach Channel	Small pond
Slope Conditions	Grass and cattails.
Bottom Conditions	Cattails.
Rock Slides or Falls	None observed
Log Boom	None observed
Debris	None observed
Condition of Concrete Lining	N/A
Drains or Weep Holes	N/A
b. Intake Structure	Concrete riser and angle iron trash rack.
Condition of Concrete	Under water. Appears good.
Stop Logs and Slots	None observed
Condition of Trash Rack	Good
A-5	

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980
 PROJECT FEATURE Diversion Dike NAME _____
 DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - INTAKE CHANNEL AND INTAKE STRUCTURE</u>	
a. Approach Channel	Earth channel
Slope Conditions	Good. Grass and brush.
Bottom Conditions	Good
Rock Slides or Falls	None observed
Log Boom	None observed
Debris	None observed
Condition of Concrete Lining	N/A
Drains or Weep Holes	N/A
b. Intake Structure	Concrete riser and angle iron trash rack.
Condition of Concrete	Under water. Appears good.
Stop Logs and Slots	None observed.
Condition of Trash Rack	Good

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980
 PROJECT FEATURE Main Dam NAME _____
 DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - TRANSITION AND CONDUIT</u>	30 Inch Reinforced Concrete Pipe
General Condition of Concrete	Good
Rust or Staining on Concrete	None observed
Spalling	None observed
Erosion or Cavitation	None observed
Cracking	Last downstream pipe joint has minor crack.
Alignment of Monoliths	Good
Alignment of Joints	Good
Numbering of Monoliths	12 pipe sections (from plans)
	<p><u>NOTE:</u> Pipe observed from outlet. Water flowing through conduit during inspection.</p> <p><u>NOTE:</u> There is a vent for the conduit which extends to an outlet at the upstream face of the embankment. Exposed portion of the vent is in good condition.</p>
A-7	

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980
 PROJECT FEATURE Diversion Dike NAME _____
 DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - TRANSITION AND CONDUIT</u>	30 Inch Reinforced Concrete Pipe
General Condition of Concrete	Good
Rust or Staining on Concrete	None observed
Spalling	None observed
Erosion or Cavitation	None observed
Cracking	None observed
Alignment of Monoliths	Good
Alignment of Joints	Good
Numbering of Monoliths	12 pipe sections (from plans)
	<p><u>NOTE:</u> Pipe observed from outlet. Water flowing through conduit during inspection.</p> <p><u>NOTE:</u> There is a vent for the conduit which extends to an outlet at the upstream face of the embankment. Exposed portions of the vent are in good condition. There is an erosion gully (up to 1 foot deep) below the vent apparently caused by a concrete pad at the vent outlet.</p>

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam

DATE November 17, 1980

PROJECT FEATURE Main Dam

NAME _____

DISCIPLINE _____

NAME _____

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL</u>	Free Outlet. 30 Inch RCP.
General Condition of Concrete	Good
Rust or Staining	None observed
Spalling	None observed
Erosion or Cavitation	None observed
Visible Reinforcing	None observed
Any Seepage or Efflorescence	Efflorescence at joint crack.
Condition at Joints	Last downstream pipe joint has minor crack.
Drain holes	None observed
Channel	Stilling pool then natural stream.
Loose Rock or Trees Over- hanging Channel	Trees in woods.
Condition of Discharge Channel	Brush and trees along channel.

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980
 PROJECT FEATURE Diversion Dike NAME _____
 DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL</u>	Free Outlet. 30 Inch Pipe.
General Condition of Concrete	Good
Rust or Staining	None observed
Spalling	None observed
Erosion or Cavitation	None observed
Visible Reinforcing	None observed
Any Seepage or Efflorescence	None observed
Condition at Joints	Good
Drain holes	None observed
Channel	Stilling pool then excavated channel approx. 85 feet long. Trees in woods beyond excavated channel.
Loose Rock or Trees Over- hanging Channel	
Condition of Discharge Channel	Brush and grass in channel.
	<u>NOTE:</u> Sloughing of riprap and embankment around outlet is occurring.

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam DATE November 17, 1980
 PROJECT FEATURE Main Dam NAME _____
 DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITION
<u>OUTLET WORKS: - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNFLS</u>	Earth Emergency Spillway
a. Approach Channel	Grassed channel
General Condition	Good
Loose Rock Overhanging Channel	None observed
Trees Overhanging Channel	None observed
Floor of Approach Channel	Grassed
b. Weir	
General Condition of Concrete	NOTE: Weir is a 30 foot long grassed level section between approach and discharge channels.
Rust or Staining	
Spalling	
Any Visible Reinforcing	
Any Seepage or Efflorescence	
Drain Holes	
c. Discharge Channel	Grassed channel.
General Condition	Good
Loose Rock Overhanging Channel	None observed
Trees Overhanging Channel	Trees at sides of channel.
Floor of Channel	Grassed. Several large depressions at downstream end.
Other Obstructions	Downstream end of spillway is a 2H:1V 15 foot high slope containing trees and brush.

INSPECTION CHECK LIST

PROJECT Talcott Reservoir Dam

DATE November 17, 1980

PROJECT FEATURE Diversion Dike

NAME _____

DISCIPLINE _____

NAME _____

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS</u>	Earth Emergency Spillway
a. Approach Channel	Grassed channel
General Condition	Good
Loose Rock Overhanging Channel	None observed
Trees Overhanging Channel	None observed
Floor of Approach Channel	Grassed
b. Weir	<u>NOTE:</u> Weir is a 30 foot long grassed level section between approach and discharge channels.
General Condition of Concrete	
Rust or Staining	
Spalling	
Any Visible Reinforcing	
Any Seepage or Efflorescence	
Drain Holes	
c. Discharge Channel	Grassed channel
General Condition	Good
Loose Rock Overhanging Channel	None observed
Trees Overhanging Channel	None observed
Floor of Channel	Grassed
Other Obstructions	Woods at end of channel
	<u>NOTE:</u> Minor sloughing and damp area noted at base of east spillway embankment.

APPENDIX B

ENGINEERING DATA

APPENDIX B-1

DESIGN, CONSTRUCTION AND MAINTENANCE RECORDS

<u>Location</u>	<u>Items</u>
Mr. Victor J. Galgowski Dam Safety Engineer Water Resources Unit Department of Environmental Protection State of Connecticut State Office Building Hartford, Connecticut 06115	<ul style="list-style-type: none">• 1. As Built Plans2. State Inspection Reports• 3. Rating Curves• 4. Flood Emergency Plan
Mr. Whitney T. Ferguson, Jr. State Conservation Engineer Soil Conservation Service U.S. Department of Agriculture Mansfield Professional Park Storrs, Connecticut 06268	<ul style="list-style-type: none">1. As Built Plans• 2. Design Report3. Design Calculations4. Construction Inspection Reports• 5. Information Storage and Retrieval Form

• Indicates material contained in this Phase I Inspection Report.

DESIGN REPORT

SOUTH BRANCH PARK RIVER WATERSHED SITE NO. 1, TALCOTT RESERVOIR HARTFORD COUNTY, CONNECTICUT

This project is located in Hartford County, in West Hartford, Connecticut. The transparent overlay (sheet 4 of this report) together with the Avon, Connecticut quadrangle published by the U.S. Geological Survey, may be used to locate the site.

This is a class (c) flood prevention project (see Washington Engineering Memorandum SCS-27) and was designed in accordance with Soil Conservation Service criteria.

The project is composed of a diversion channel and four embankments, referred to as:

1. Main dam
2. Diversion dike
3. Dike No. 2
4. Low flow barrier

The embankments are earthfill with cutoff trenches to dense glacial material or rock. They contain drainage systems consisting of blanket type embankment drains and foundation toe drains.

The diversion channel diverts the flow from a drainage area of 1.07 square miles into the reservoir area.

The purpose of this project is to reduce flooding downstream by providing temporary storage for the runoff from 1.60 square miles. The temporary storage is released gradually thru two principal spillway systems.

Each principal spillway system utilizes a 3.5' x 4' reinforced concrete riser and a 30-inch reinforced concrete water pipe which has a vented orifice restriction at the inlet to the pipe. A low flow barrier in the channel between the main dam and the diversion dike forces the majority of the base flow thru the auxiliary principal spillway in the diversion dike.

There are two emergency spillways consisting of a 90-foot wide spillway cut thru the right abutment of the diversion dike and a 40-foot wide spillway of compacted fill on the left abutment of the main dam. The emergency spillways will not operate until the runoff exceeds 12 inches from a storm pattern similar to that caused by hurricane "Diana."

The inflow hydrographs used in the design of these structures were developed by the method described in the National Engineering Handbook, Section 4, Hydrology. The flood routing procedure used in the design is given in the National Engineering Handbook, Section 5, Hydraulics.

REFERENCE:

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ENGINEERING & WATERSHED PLANNING UNIT
UPPER MERSEY, PENNSYLVANIA

DRAWING NO.
CN-418-R

SHEET 1 OF 5
DATE 3/23/63

DESIGN REPORT

The following table gives the results of the hydrologic and hydraulic determinations:

Factor Which Determines Stage	Surface Area Acres	Runoff in Inches	Peak Inflow c.f.s.	Peak Outflow c.f.s.	Elev. of Maximum Stage	Storage in Ac.-Ft.	Element of Structure Determined by Maximum Stage
50-year sediment accumulation	24.20	>.08	-	-	435.0	>6.7	Crest of riser
Storm "Diane" 100-year frequency storm moisture condition	65.7	12.0	1860	129	452.5	826 ¹	Crest of emergency spillway
1.75x6-hour point rain-fall moisture condition II	71.5	16.3 ²	4870	1775	455.4	1015 ¹	Design high water
2.5x6-hour point rain-fall moisture condition II	76	25.3 ²	6330	3125	456.7	1115 ¹	Check top of dam
2.6' free-board	-	-	-	426	458.0	1205 ¹	Top of dam

¹Storage above riser crest (elev. 435.0).

²Runoff from total drainage area.

The time to empty 100 percent of the flood storage is 5.5 days.

The geology report and Soil Mechanics Laboratory report were used to determine the adequacy of the design. Copies of these reports are attached.

The following publications were used in the design of this dam:

NE Handbook No. 5, Hydraulics
 NE Handbook No. 4, Hydrology
 NE Handbook No. 6, Structural Design
 Technical Releases Nos. 2, 5 and 10

REFERENCE:

U.S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 ENGINEERING & WATERSHED PLANNING UNIT
 UPPER MERION, PENNSYLVANIA

DRAWING NO.

CN-418-R

SHEET 2 OF 5

DATE 3/23/63

DESIGN REPORT

Copies of these publications may be obtained from Mr. H. Paul Tedrow,
State Conservationist, USDA, Soil Conservation Service, Storrs,
Connecticut.

Concurred:

Gerald E. Oman

Gerald E. Oman
Design Engineer

T. R. Wire
State Conservation Engineer

Vincent McKeever
Vincent McKeever
Hydrologist

Robert F. Fanner
Robert F. Fanner
Geologist

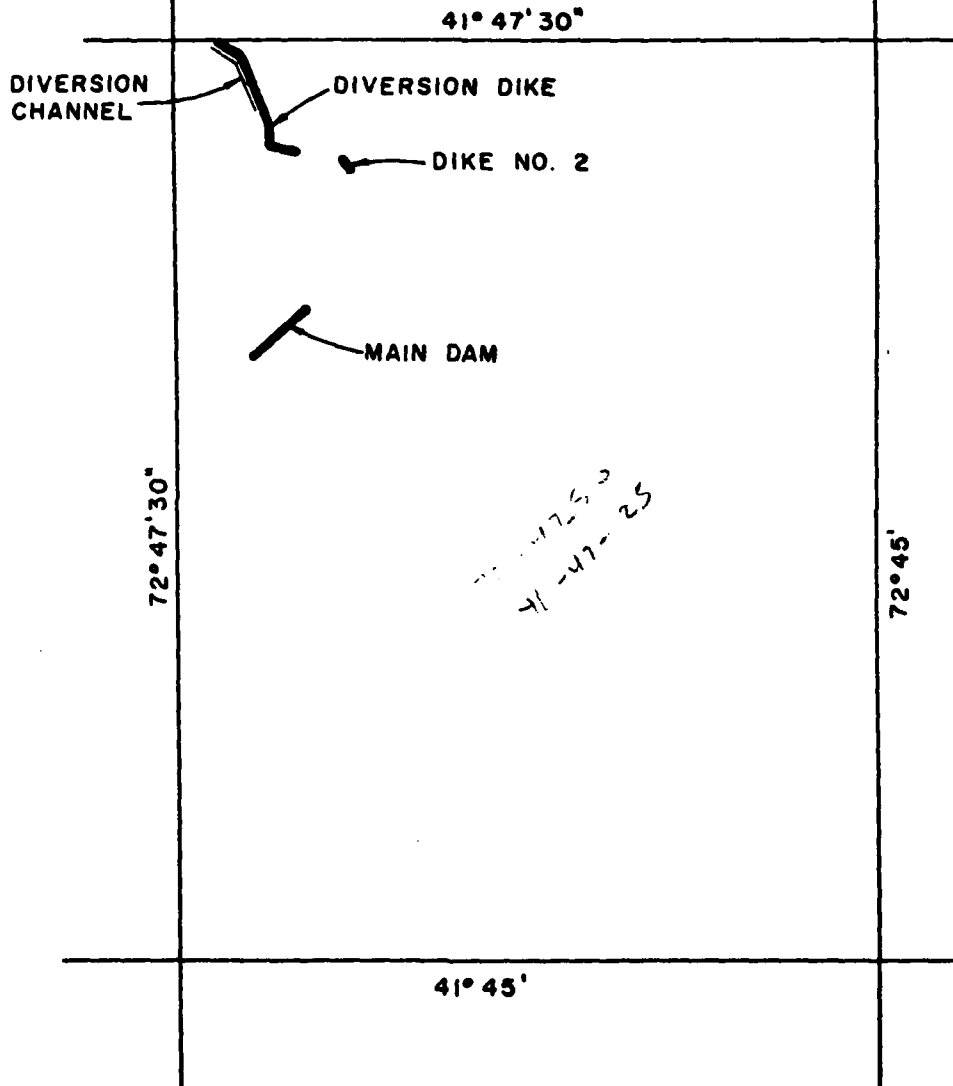
REFERENCE:

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ENGINEERING & WATERSHED PLANNING UNIT
UPPER DARBY, PENNSYLVANIA

DRAWING NO.
CE-418-R

SHEET 3 OF 5
DATE 3/29/63

DESIGN REPORT



REFERENCE:

USGS AVON
7.5 MIN. QUAD.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ENGINEERING & WATERWAYS PLANNING UNIT
UPPER DARBY, PENNSYLVANIA

DRAWING NO.

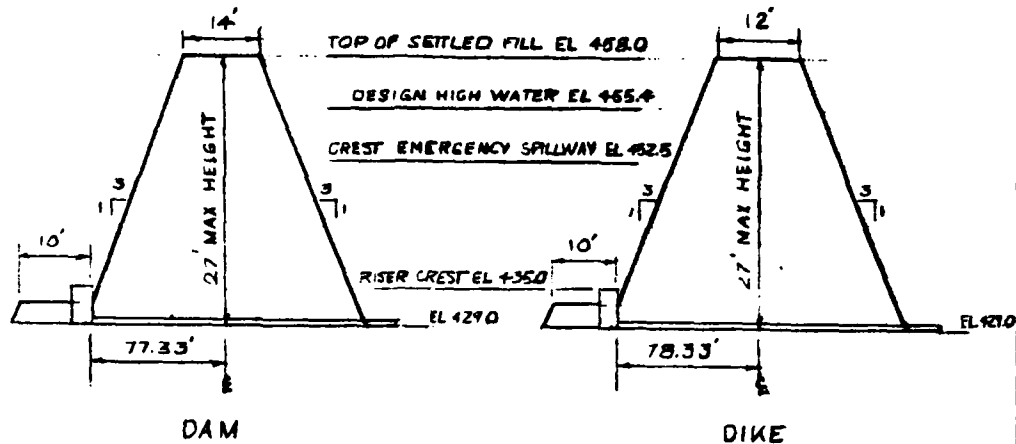
CN-418-R

SHEET 4 OF 5

DATE MAR. 1963

DESIGN REPORT

Summary Sheet



Typical X-Section

I. Watershed data

A. Structure class	(a)	
B. Drainage area	1.60	Ac.
C. Time of concentration - T	See Hydrology Section	Hrs.
D. Hydrologic curve number - C ⁿ		
1. Moisture condition II ⁿ	71	
2. Moisture condition III	88	

II. Principal spillway

A. Conduit		
1. Size (I.D.)	30	In.
2. Length	182	Ft.
B. Riser		
1. Size	3.5 x 4.0	Ft.
2. Height	4	Ft.
C. Weir length	15	Ft.
D. Orifice size - depth of 30" pipe - 1.0' (dike), 1.5' (dam)	1.5' (dam)	in.
E. Pond drain size	None	in.

III. Emergency spillway

A. Width	40 and 90	Ft.
B. Side slopes	3:1	
C. Length of level section	30	Ft.
D. Exit slope	1 - .025; 2 - .025	Ft./Ft.
E. Maximum velocity at control section (D.H.W.)	1-7.5; 2-7.5	Ft./Sec.
F. Duration of flow (D.H.W.) through emergency spillway	8.2	Hrs.
G. Frequency of use	100-year	

REFERENCE:

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ENGINEERING & WATERSHED PLANNING UNIT
UPPER DARBY, PENNSYLVANIA

DRAWING NO.
CE-418-A

SHEET 5 OF 5
DATE 3/25/63

IDENTIFICATION AND LOCATION

1. Site 1 Talcott
- STRUCTURE DESIGNATION (NAME OR NUMBER)
2. Park River-Conn. River
- RIVER BASIN (NAME)
3. South Branch-Park River
- WATERSHED (NAME OR UNNAMED)
4. Connecticut
- STATE (NAME)
5. Hartford
- COUNTY (NAME)
6. West Hartford
- TOWNSHIP (NAME)
7. 1
- CONGRESSIONAL DISTRICT (NUMBER)
8. Central Connecticut Lowlands
- PHYSIOGRAPHIC AREA 1/ (NAME)
9. WP
- AUTHORIZATION (WP, PP, RCED, CO-OT, PILOT)
10. 41 47 25
- LATITUDE (DEGREES, MINUTES, SECONDS)
11. 72 47 50
- LONGITUDE (DEGREES, MINUTES, SECONDS)
12. 458.0
- ELEVATION OF TOP OF DAM (SETTLED FILL- FEET MSL)
13. DATE PLAN APPROVED 1962
14. DATE OF MOST RECENT SUPPLEMENT 1972
- (LEAVE BLANK IF NOT SUPPLEMENTED)
15. DATE CONSTRUCTION COMPLETED 1964
- (LEAVE BLANK IF NOT COMPLETED)
16. TYPE OF DAM (CIRCLE APPLICABLE) -
- ☒ EARTH, ☐ ROCK, ☐ CONCRETE, OTHER
17. PLANNED PURPOSES (CIRCLE ALL APPLICABLE) -
- ☒ FLOOD PREVENTION, ☐ RECREATION, ☐ FISH & WILDLIFE,
- ☐ MUNICIPAL AND INDUSTRIAL WATER SUPPLY, ☐ IRRIGATION,
- ☐ NAVIGATION, ☐ HYDRO-ELECTRIC, ☐ SEDIMENT CONTROL,
- ☐ LOW FLOW AUGMENTATION, OTHER
18. HAZARD CLASS (A, B, OR C) C
19. EARTHQUAKE ZONE 2/ (0, 1, 2, 3, or 4) 1

SIZE AND CAPACITY

20. DRAINAGE AREA UNCONTROLLED 1030 AC.
- (UPSTREAM FROM STRUCTURE)
21. DRAINAGE AREA CONTROLLED AC.
- (UPSTREAM FROM STRUCTURE)
22. MAXIMUM FILL HEIGHT 27 FT.
- (FROM LOW POINT ON CENTERLINE, BEFORE EXCAVATING,
- TO TOP OF SETTLED FILL.) Dam 1300
23. CREST LENGTH OF DAM (ALONG CENTERLINE) FT.
- Dike 3125
24. VOLUME OF FILL 132,000 cu. yd.

25. SUBMERGED SEDIMENT STORAGE } 2.6 AC
26. AERATED SEDIMENT STORAGE } AC
27. MUNICIPAL AND INDUSTRIAL WATER STORAGE AC
28. RECREATION WATER STORAGE AC
29. FISH AND WILDLIFE STORAGE AC
30. IRRIGATION STORAGE AC
31. OTHER BENEFICIAL STORAGE AC
32. TOTAL FLOOD STORAGE 820 AC
33. TEMPORARY EMERGENCY SPILLWAY STORAGE (BETWEEN CREST
- OF LOWEST EMERGENCY SPILLWAY AND TOP OF SETTLED FILL)
- 379 AC
34. SURFACE AREA OF NORMAL POOL AC
35. LENGTH OF SHORE LINE OF NORMAL POOL MILE
36. MAXIMUM DEPTH OF NORMAL POOL FT.

PRINCIPAL SPILLWAY FEATURES

37. PRINCIPAL SPILLWAY TYPE (CIRCLE APPLICABLE) -
- ☒ PIPE, ☐ MONOLITHIC, ☐ OPEN CONCRETE STRUCTURE, OTHER
38. IS THERE COLD WATER RELEASE FACILITY? No
39. NUMBER OF STAGES 1 (1 or 2)
40. LOW STAGE CAPACITY CFS
- (AT HIGH STAGE PRINCIPAL SPILLWAY CREST)
41. PRINCIPAL SPILLWAY CAPACITY 129 CFS
- (AT LOWEST EMERGENCY SPILLWAY CREST)

PRINCIPAL SPILLWAY CONDUIT FEATURES

42. MAJOR PORTION OF CONDUIT IS ON (CIRCLE APPLICABLE) -
- ☐ ROCK OR ☒ EARTH
43. TYPE OF ENERGY DISSIPATOR (CIRCLE APPLICABLE) -
- ☐ IMPACT BASIN, ☐ SAF, ☒ PLUNGE POOL, ☐ NONE, OTHER
44. CONDUIT SIZE 2.5' (Two)
- (LARGEST CONDUIT THROUGH DAM) (DIAM. IN FT. IF ROUND)
- (HEIGHT AND WIDTH IN FT. IF MONOLITHIC) ALSO SHOW
- NUMBER OF BARRELS IF MULTI-BARREL
45. INLET TYPE (CIRCLE APPLICABLE) - ☒ CONCRETE-OPEN TOP
- ☐ COVERED TOP, ☐ HOOD INLET, ☐ METAL-OPEN TOP, OTHER
46. HEIGHT OF RISER 4.0 FT.
- (FROM TOP OF FLOOD TO TOP OF ANTI-VORTEX)

EMERGENCY SPILLWAY FEATURES

47. PRIMARY EMERGENCY SPILLWAY TYPE (CIRCLE APPLICABLE)
- ☐ CLOSED CONDUIT, ☐ OPEN CONCRETE STRUCTURE, ☐ EARTH,
- ☐ VEGETATED, ☐ SOFT ROCK, ☒ HARD ROCK 3/
48. PRIMARY EMERGENCY SPILLWAY WIDTH 130 ** FT.
- (CREST LENGTH FOR CONCRETE)
49. 1 %
- PERCENT CHANCE OF USE OF PRIMARY EMERGENCY SPILLWAY

1/ M. M. Fenneman, 1938, Physiography of Eastern United States, McGraw Hill Book Co., New York, N. Y.

2/ See TSC Technical Note - Engineering UD-22.

3/ Soft Rock - Rock that will erode when subjected to flowing water.

Hard Rock - Rock that is resistant to erosion due to flowing water.

EMERGENCY SPILLWAY FEATURES (CONT'D.)

50. CAPACITY OF PRIMARY EMERGENCY SPILLWAY (WHEN POOL IS AT TOP OF DAM) 4906 CFS
51. DIFFERENCE IN ELEVATION BETWEEN CREST OF PRIMARY EMERGENCY SPILLWAY AND TOP OF DAM 5.5 FT.
52. SECONDARY EMERGENCY SPILLWAY IS (CIRCLE APPLICABLE)
☒ EARTH, VEGETATED, SOFT ROCK, HARD ROCK 3/
53. WIDTH OF SECONDARY EMERGENCY SPILLWAY FT.
54. CAPACITY OF SECONDARY EMERGENCY SPILLWAY (WHEN POOL IS AT TOP OF DAM) CFS
55. DIFFERENCE IN ELEVATION BETWEEN CREST OF SECONDARY EMERGENCY SPILLWAY AND TOP OF DAM FT.

OMIT ITEMS 56-59 IF DRAINAGE AREA IS LESS THAN 10 SQUARE MILES

56. BULK LENGTH OF SOFT ROCK 3/ EARTH FT.
OR VEGETATED SPILLWAY (SEE TR-52 FOR DEFINITION)
57. PT OF SURFACE MATERIAL IN EARTH OR VEGETATED SPILLWAY (PREDOMINANT MATERIAL AT OR NEAR SURFACE BEFORE TOP SOILING)
58. USCS CLASSIFICATION OF ABOVE MATERIAL
59. VOLUME OF OUTFLOW THROUGH VEGETATED OR EARTH SPILLWAY (DURING PASSAGE OF FREEBOARD HYDROGRAPH) AC. FT.

COST DATA

WORK PLAN

60. LAND RIGHTS COST \$ 96,089

76. REMARKS * Structure designed with two (2) principal spillways.
One in the dam and one in the dike.
** Two Emergency Spillways - one 90' B.W. and one 40' B.W.

3/ Soft Rock - Rock that will erode when subjected to flowing water.
Hard Rock - Rock that is resistant to erosion due to flowing water.

61. FEDERAL SHARE OF LAND RIGHTS COST \$
62. CONSTRUCTION COST \$ 277,617
(DOES NOT INCLUDE LAND RIGHTS, ENGINEERING AND PROJECT ADMINISTRATION)
63. FEDERAL SHARE OF CONSTRUCTION COST IN PERCENT 100 %

COMPLETED STRUCTURE

64. FINAL CONSTRUCTION COST \$ 256,000

ADDITIONAL DATA REQUIRED FOR U.S. REGISTER OF DAMS (LEAVE BLANK FOR DAMS LESS THAN 33 FT. IN HEIGHT)

65. Talcott
POPULAR NAME OF DAM
66.
NAME OF RESERVOIR
67. NEAREST CITY OR TOWN West Hartford
68. TYPE OF DAM IF CONCRETE (CIRCLE APPLICABLE)
BUTTRESS, ARCH, MULTI-ARCH
69. IS DISCHARGE THROUGH PRINCIPAL SPILLWAY CONTROLLED BY GATES? NO
70. ESTIMATED COMPLETION DATE 1964
(IF UNDER CONSTRUCTION)
71. OWNER State of Connecticut
72. ENGINEERING BY Soil Conservation Service
73. CONSTRUCTION BY Mark Construction Co.
(CONSTRUCTION CONTRACTOR)
74. ABOVE DATA FURNISHED BY Joseph Polulech
(NAME)
75. DATE DATA FURNISHED 11/75

**FLOOD EMERGENCY PLAN PPG
CONN. DEPT. ENVIR. PROT.**

will commence. The pump and hoses are stored in Building No. 17.

- d. All gates will be inspected to insure proper closing without clogging by debris.
- e. Screen well house openings will be closed. The closure will consist of
 - (i) stoplogging the one entrance door into the structure,
 - (ii) closing the maintenance trough opening with the steel plate mounted outside the building, and
 - (iii) the sluice gate on the opening under the well house floor will be secured.

The flood works are on the property of Chase Brass and Cooper Co., Inc., and AMTRAK. Chase Brass has agreed to assist in maintaining and operating these works. The individuals assigned to these responsibilities from Chase Brass are as follows:

L. Conard 756-9448

B. Kleinselbeck 754-8229

(A guard is on duty 24 hours at the plant.)

- ▷ 5. Soil Conservation Service Flood Control Structures: The dams listed below are dry flood control dams which are owned and operated by the State of Connecticut. Their sole purpose is to impound and slowly release flood water. In order to properly operate, it is imperative the culverts be clear and free of debris. For this reason, upon notification of a watch the structures should be inspected to insure clear outlets. During a warning the dams will be inspected at approximately 2 - 3 hour intervals. Inspections should consist of
- a. estimating the height of water,
 - b. looking for piping failures, sand boils, or other abnormal leakage, especially in the vicinity of the culvert outlets, and
 - c. looking for the development of slope sloughing or other structural problems.

Findings of each inspection should be reported immediately to the F.E.O.C.

FLOOD EMERGENCY PLAN PP 7
CONN. DEPT. ENVIR PROT.

Crew Assignments:

Bloomfield Reservoir, Site 2, Tunxis Ave. Bloomfield

Bloomfield Reservoir, Site 3a, Tunxis Ave., Bloomfield

Blue Hills Reservoir, Filley Street, Bloomfield

Wintonbury Reservoir, Filley Street, Bloomfield

Coldspring Reservoir, Sinsbury Road, Bloomfield

Crew:	Home	Office
Marilyn Aarrestad	658-5593	242-1158
Thomas Noonan	247-1847	242-1158
Calvin Innes	653-2996	242-1158

Thousand Acre Swamp, New Marlboro, Massachusetts

Westside Reservoir, Westside Road, Norfolk

Norfolk Reservoir, Route 44, Norfolk

Wood Creek Reservoir, Route 272, Norfolk

Whiting River Reservoir, Canaan Valley Road, North Canaan

Crew:

Stanley Civco	542-5423	SAME
---------------	----------	------

Roaring Brook, Unionville

South Reservoir, Farmington Avenue, West Hartford

Burnt Hill Reservoir, Tunxis Road, West Hartford

Bugbee Reservoir, Hickory Lane, West Hartford

▷ Talcott Reservoir, Route 44, West Hartford

Crew:

Robert Corbridge	673-3955	677-1819
Phillip Johnson	673-2943	677-1819
Ransom Watson	677-1819	677-1819

6. Highland Lake Flood Control Works: As part of the Flood works for Winsted, the dam at the north end of Highland Lake can be sandbagged prior to flooding to increase the storage capacity

Money To
Take Charge →

APPENDIX B-2

COPIES OF PAST INSPECTION REPORTS

Inventoried

By

Date

SUPERVISION OF DAMS
INVENTORY DATA

MAIN DAM

DAM #2

2
GT 451

Name of Dam or Pond

Talcott Reservoir Site #1

Code No.

WH 13

Nearest Street Location

Albany Ave.

Town

West Hartford

LAT. 41° 46.7'

U.S.G.S. Quad.

Avon

LONG. 72° 47.2'

Name of Stream

unnamed trib of Trout Brook

Owner

State of Conn.

Address

Dept. of Agriculture & Natural Resources
State Office Bldg.
Hartford

Pond Used For

flood control

DA 1.6/SM

Dimensions of Pond:

Width

Length

Area

24

Total Length of Dam

1240'

Length of Spillway

112'

Location of Spillway

CENTER

Height of Pond Above Stream Bed

13.5

Height of Embankment Above Spillway

5.5

Type of Spillway Construction

RISEA + RCP

Type of Dike Construction

Earth

Downstream Conditions

Summary of File Data

Remarks

D. A. E. 1032 A

Inventoried

By

SUPERVISION OF DAMS
INVENTORY DATA

Date

DIVERSION DIKE

H-13

~~ST-498~~

Name of Dam or Pond TALCOTT RES. DAM #1

Code No. H-23

Nearest Street Location RT. 44

Town W. HTPD.

LAT. 41°47.2'

U.S.G.S. Quad. AVON

LONG. 72°47.1'

Name of Stream Unnamed Tr. 6 of TROUT BRK.

Owner D. F. P.

Address

Pond Used For FLOOD CONTROL

DA 160541

Dimensions of Pond: Width _____ Length _____ Area 40

Total Length of Dam 3000' Length of Spillway _____

Location of Spillway EAST END

Height of Pond Above Stream Bed 13.5'

Height of Embankment Above Spillway 5.5'

Type of Spillway Construction RISEA & RCP

Type of Dike Construction EARTH

Downstream Conditions _____

Summary of File Data _____

Remarks _____

Would Failure Cause Damage?

B-13

Class _____

11966

APPENDIX B-3

RECORD DRAWINGS AND SKETCHES

DRAINAGE AREA	1032	ACRES
TOTAL STORAGE TO EMERGENCY SPILLWAY CREST	820	ACRE FT.
WATER SURFACE AREA	24.2	ACRES
HEIGHT OF DAM	27	FEET
VOLUME OF FILL	132,050	CUBIC YARDS

1963

SHEET 1 - COVER SHEET
SHEET 2 - PLAN OF STORAGE AREAS - DIVERSION DIKE
SHEET 3 - PLAN OF STORAGE AREAS - MAIN DAM
SHEET 4 - PLAN OF DIVERSION DIKE & CHANNEL
SHEET 5 - PLAN OF DAM & DIKE NO 2
SHEET 6 - PROFILE -DIVERSION CHANNEL
SHEET 7 - PROFILES
SHEET 8 - PROFILES
SHEET 9 - SEEPAGE DRAIN DETAILS -DIVERSION DIKE
SHEET 10 - SEEPAGE DRAIN DETAILS -DAMES
SHEET 11 - SEEPAGE DRAIN DETAILS -DAM
SHEET 12 - PLAN OF THE PRINCIPAL SPILLWAY -MAIN DAM
SHEET 13 - PLAN OF THE PRINCIPAL SPILLWAY
SHEET 14 - PLAN OF THE PRINCIPAL SPILLWAY

R WATERSHED PROJECT

ING SITE NO 1
RVOIR

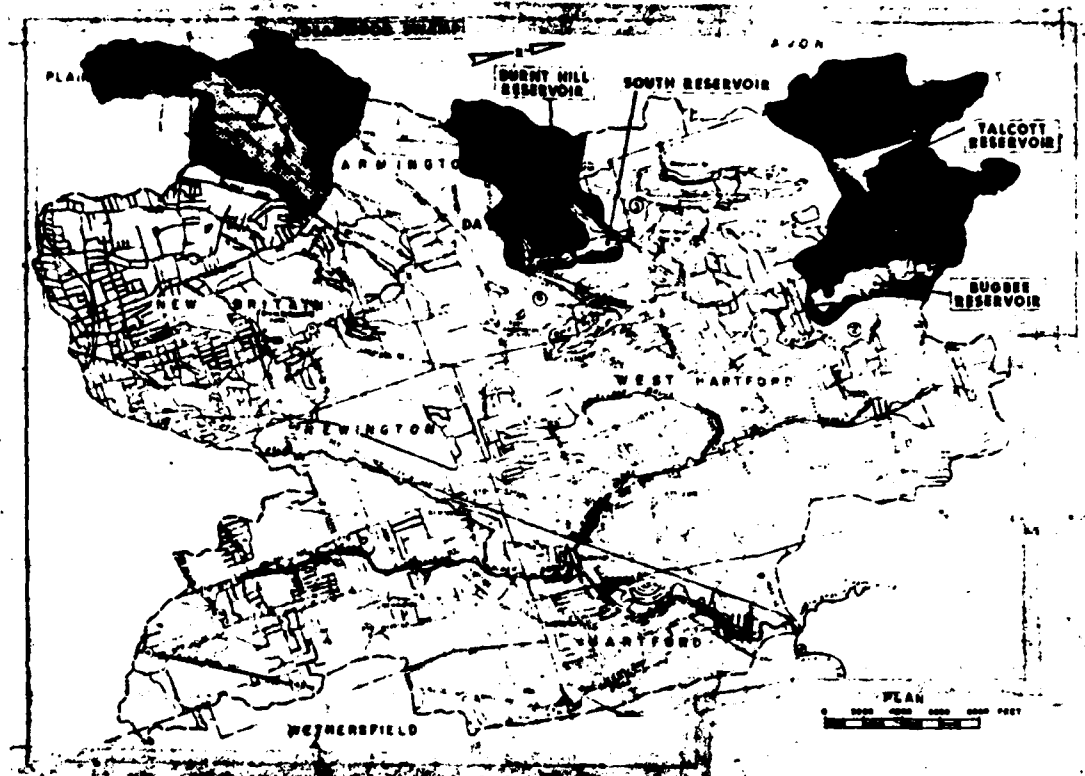
1032 ACRES
820 ACRE FT
24.2 ACRES
27 FEET
132,050 CUBIC YARDS

ED PROTECTION AND
TION ACT

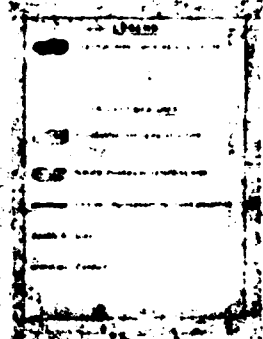
AND NATURAL RESOURCES
IECTICUT

CE OF THE
N SERVICE

NT OF AGRICULTURE



AREAS - DIVERSION DIKE
AREAS - MAIN DAM
R DIKE & CHANNEL
WE NO 2
ON CHANNEL



AREAS - DIVERSION DIKE

AREAS - DAMS

AREAS - CHANNEL

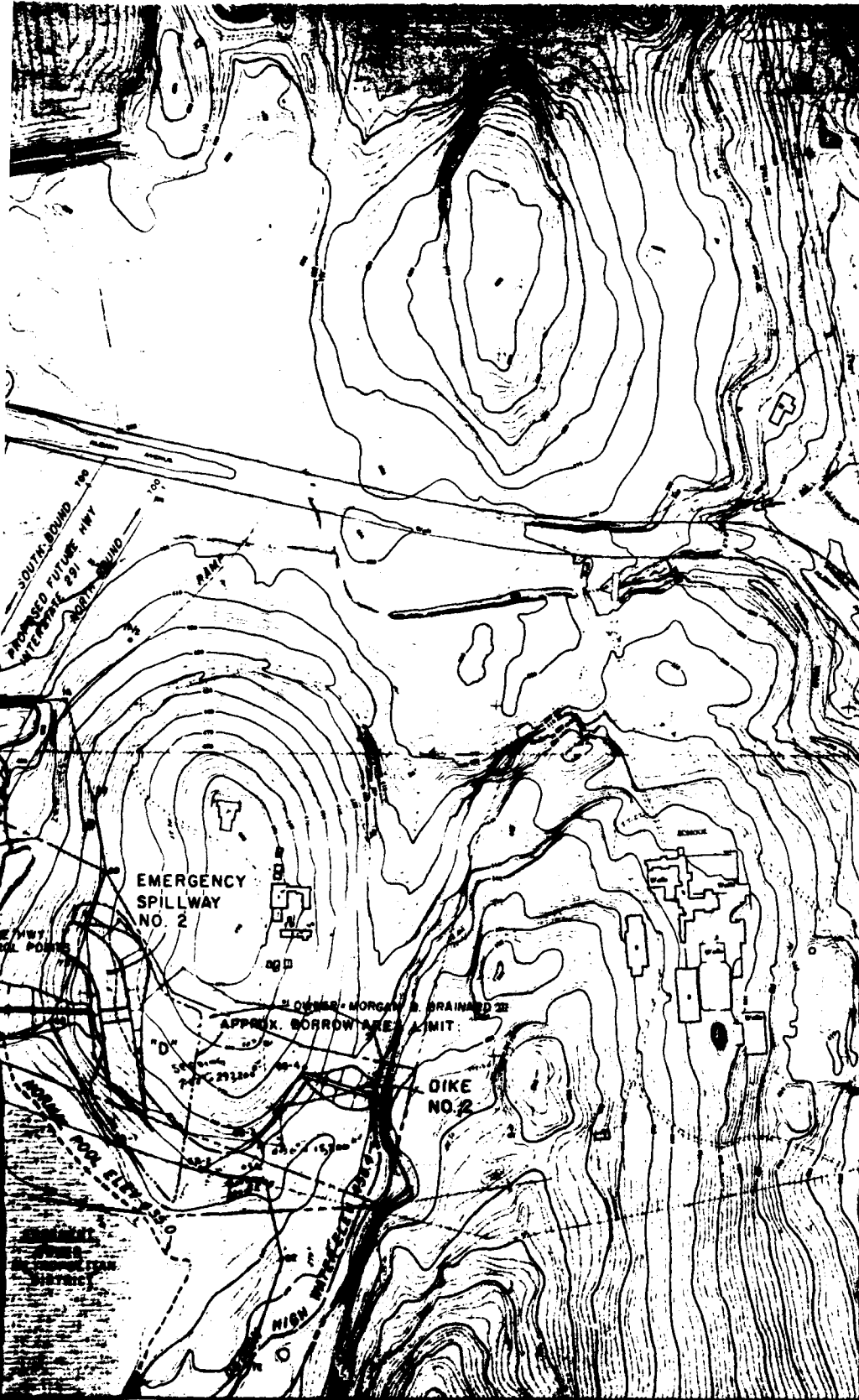
AREAS - DIVERSION DIKE

AREAS - DAMS

AREAS - CHANNEL

STATE OF CONNECTICUT
DEPARTMENT OF CONSERVATION
HARTFORD, CONNECTICUT
1964





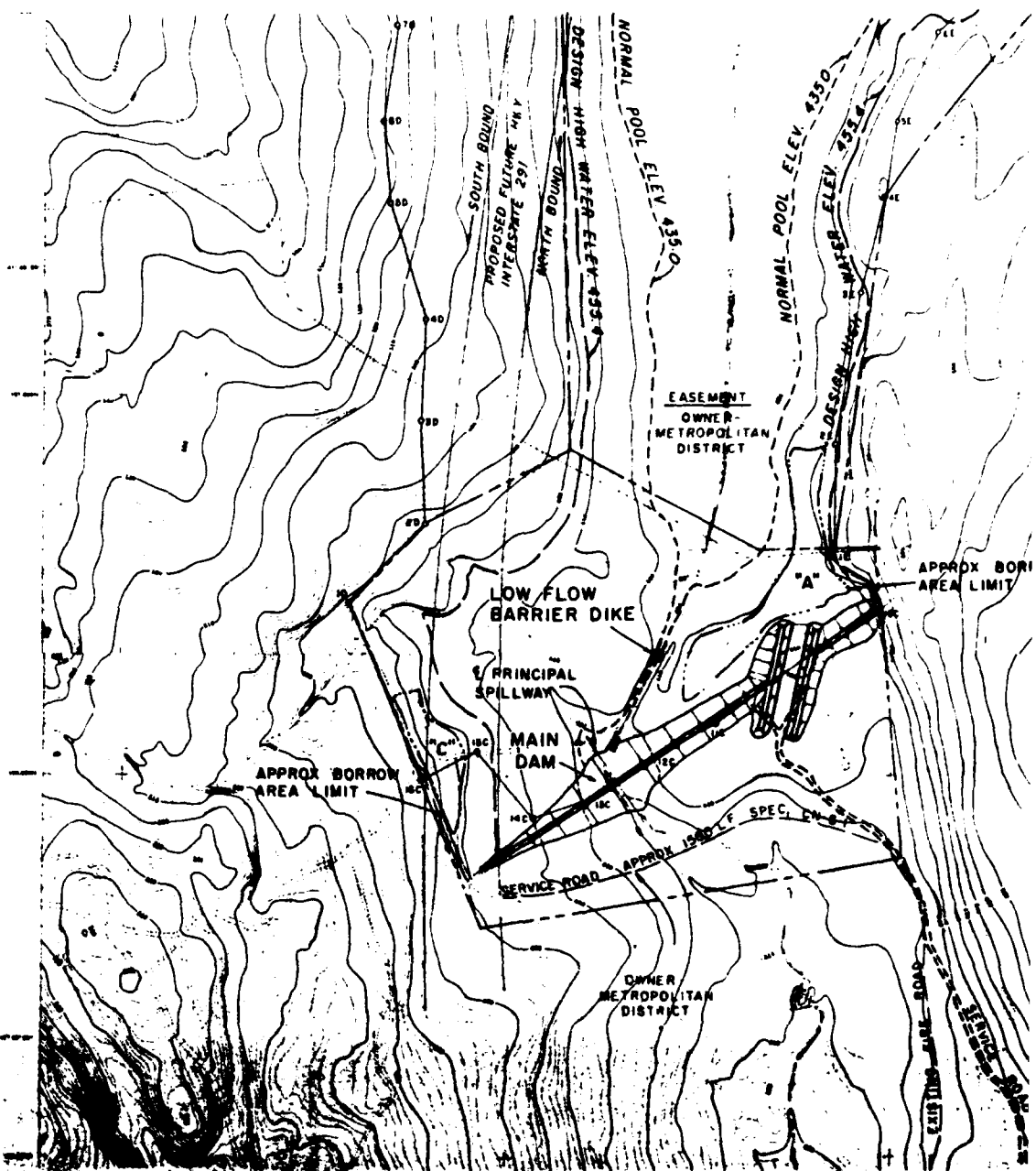
AS-BUILT

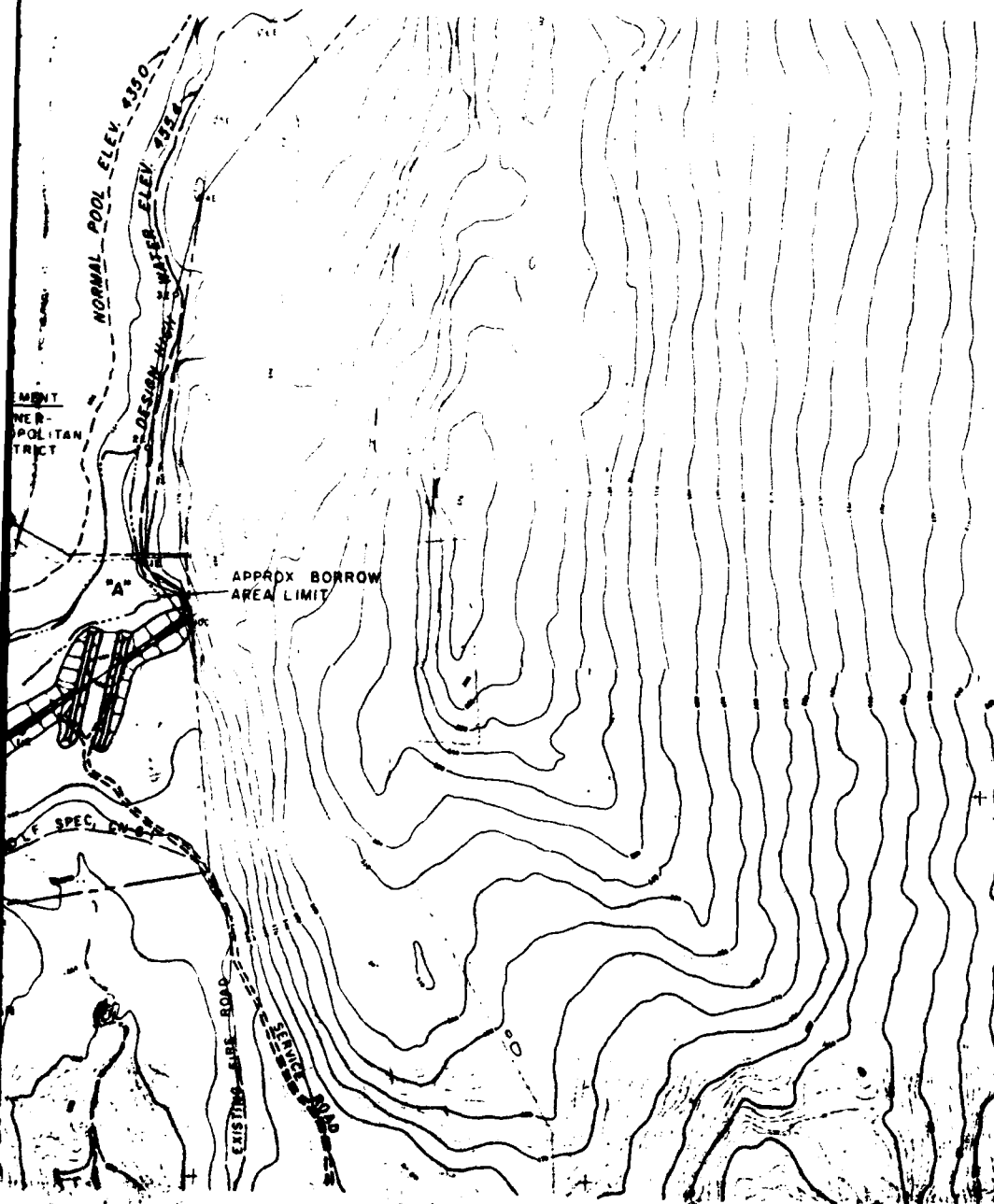
**SOUTH BRANCH PARK RIVER WATERSHED PROJECT
FLOODWATER RETARDING SITE NO. 1
TALCOTT RESERVOIR
WEST HARTFORD, CONN.**

PLAN OF STORAGE AREAS - DIVERSION DIKE

**U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE**

Designed by H. J. FERRISON	Date Feb. 1961	Approved by	
Drawn by [Signature]	Scale 1" = 100'	Checked by [Signature]	
Checked by [Signature]	Scale 1" = 100'	Project No. CN - 410 - 2	





AS-BUILT

SOUTH BRANCH PARK RIVER WATERSHED PROJECT
 FLOODWATER RETARDING SITE NO. 1
 TALCOTT RESERVOIR
 WEST HARTFORD, CONN.
PLAN OF STORAGE AREAS-MAIN DAM
 U.S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE

DATE	BY	APPROVED BY
10/1/54	J. H. [illegible]	[illegible]
10/1/54	[illegible]	[illegible]
10/1/54	[illegible]	[illegible]

LOCATION OF P12 & P12A
NOT TO SCALE

CURVE 3A

$\Delta = 57^{\circ}04'$
 $R = 106.64$
 $T = 80.00$
 $L = 93.58$
 $D = 24^{\circ}45.6'$
 $\text{Sta. P.C.} = 21+75.35$
 $\text{Sta. P.T.} = 22+68.93$

CURVE 2A

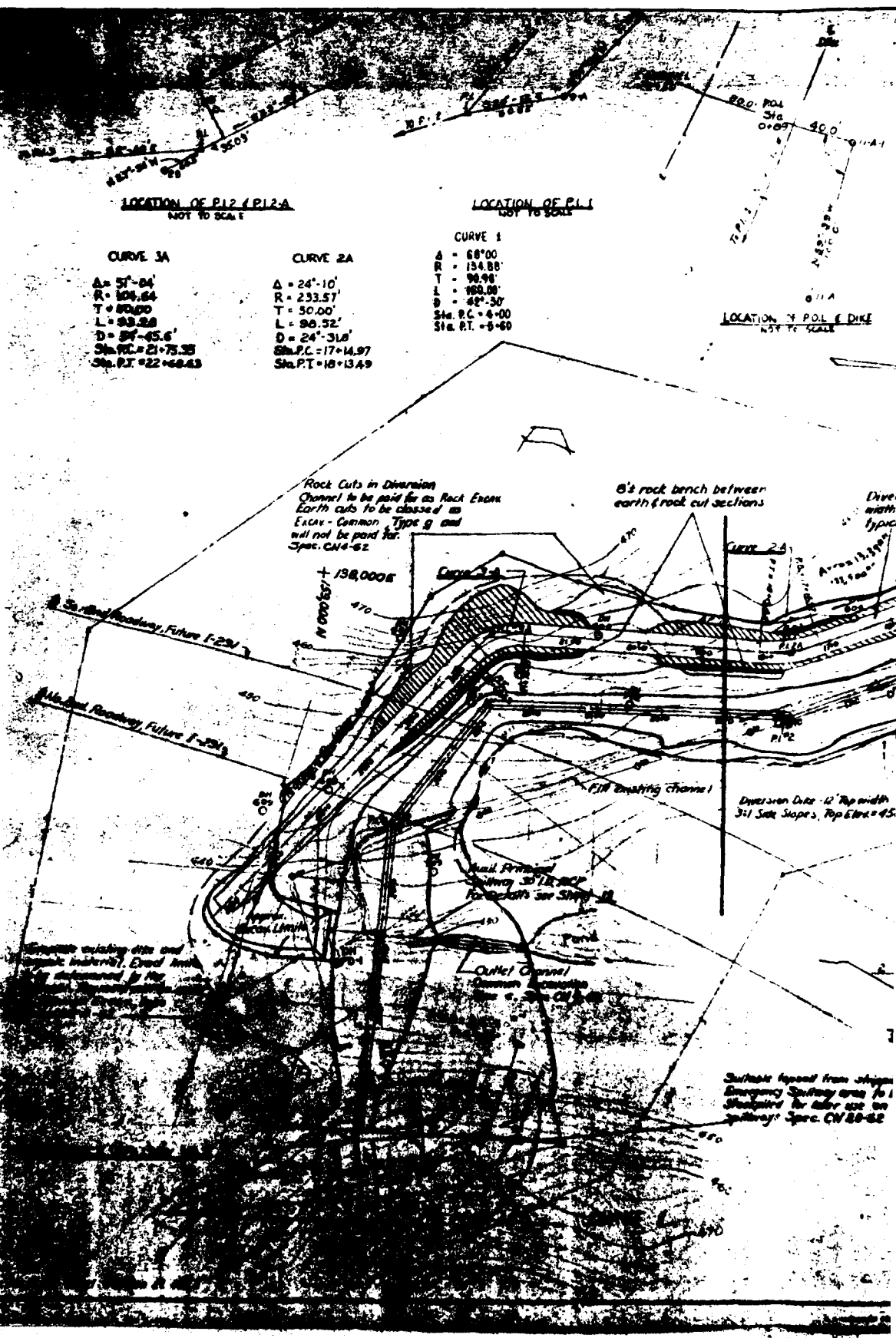
$\Delta = 24^{\circ}10'$
 $R = 233.57$
 $T = 50.00$
 $L = 96.52$
 $D = 24^{\circ}31.6'$
 $\text{Sta. P.C.} = 17+14.97$
 $\text{Sta. P.T.} = 18+13.49$

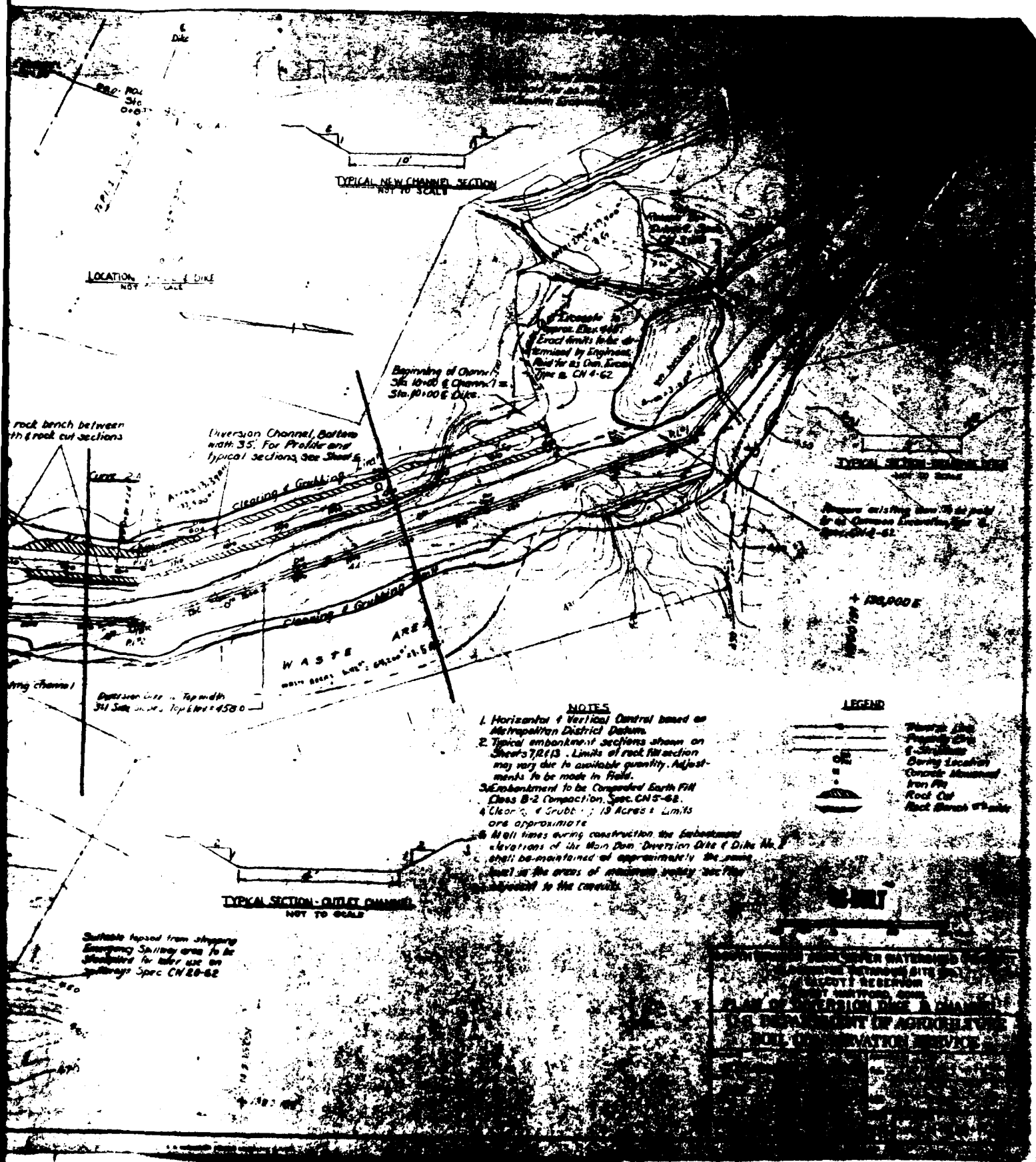
LOCATION OF P11
NOT TO SCALE

CURVE 1

$\Delta = 68^{\circ}00'$
 $R = 134.88$
 $T = 96.96$
 $L = 160.00$
 $D = 42^{\circ}30'$
 $\text{Sta. P.C.} = 4+00$
 $\text{Sta. P.T.} = 5+60$

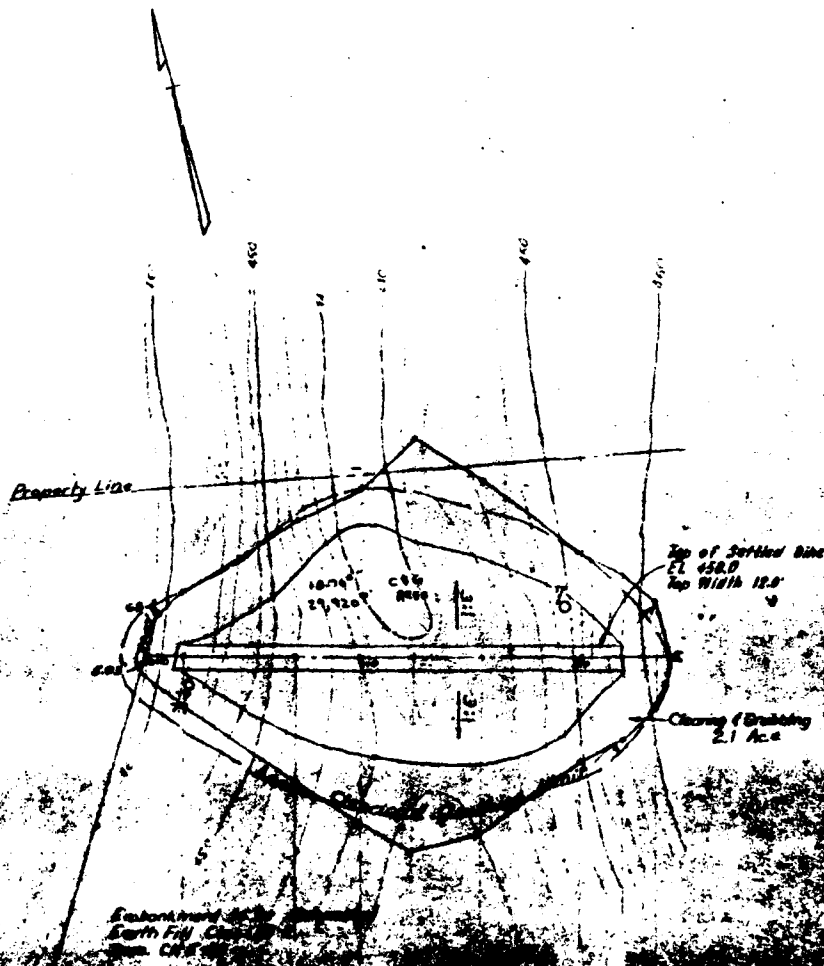
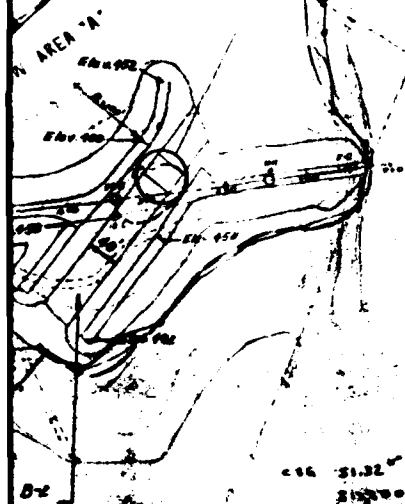
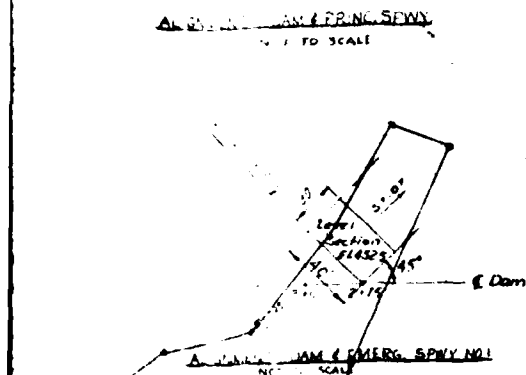
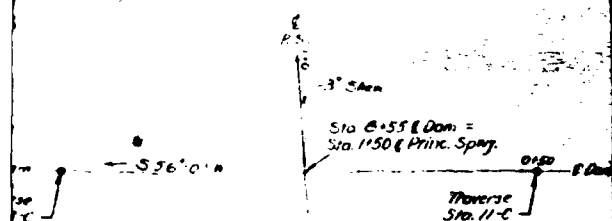
LOCATION OF P10 & DIKE
NOT TO SCALE

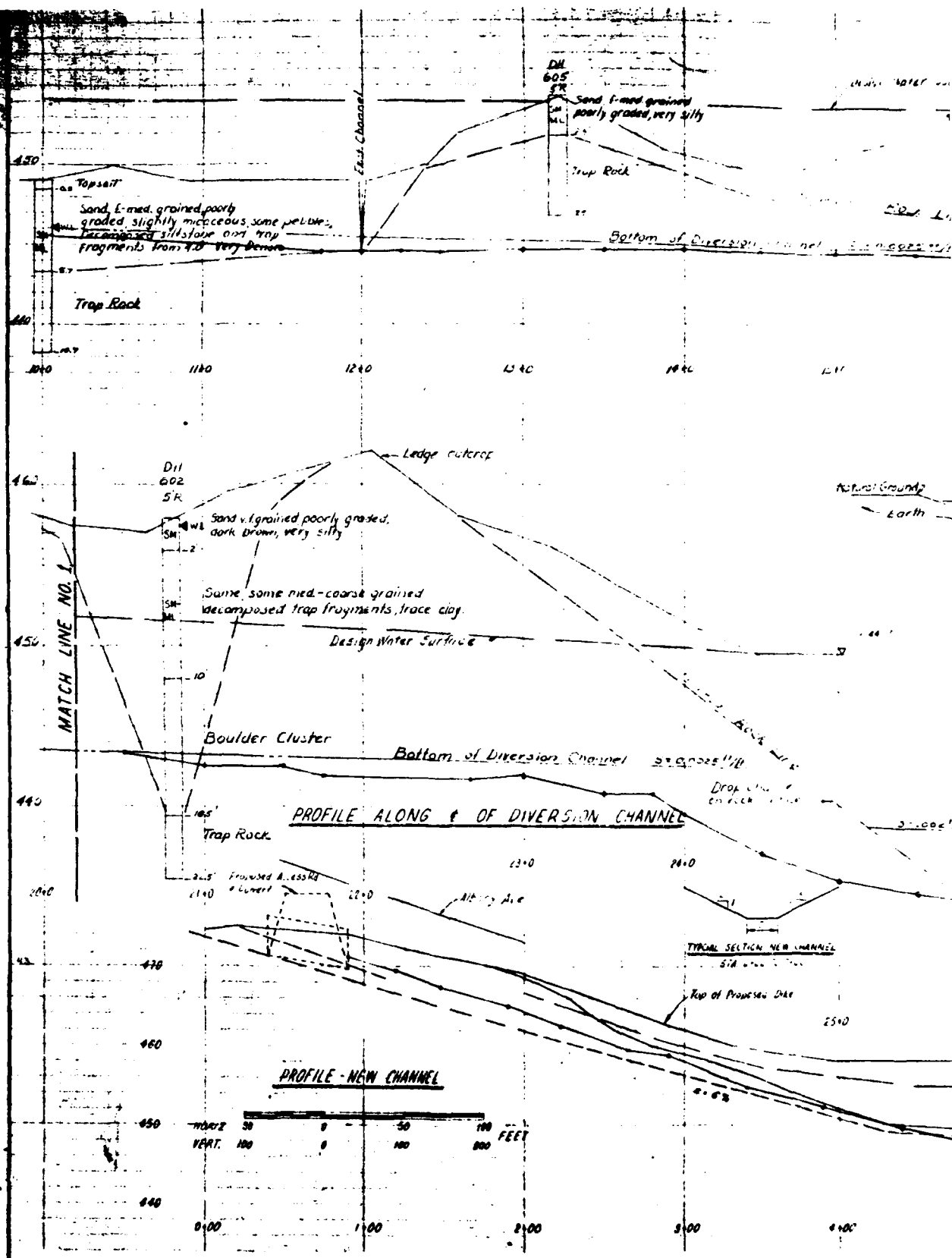


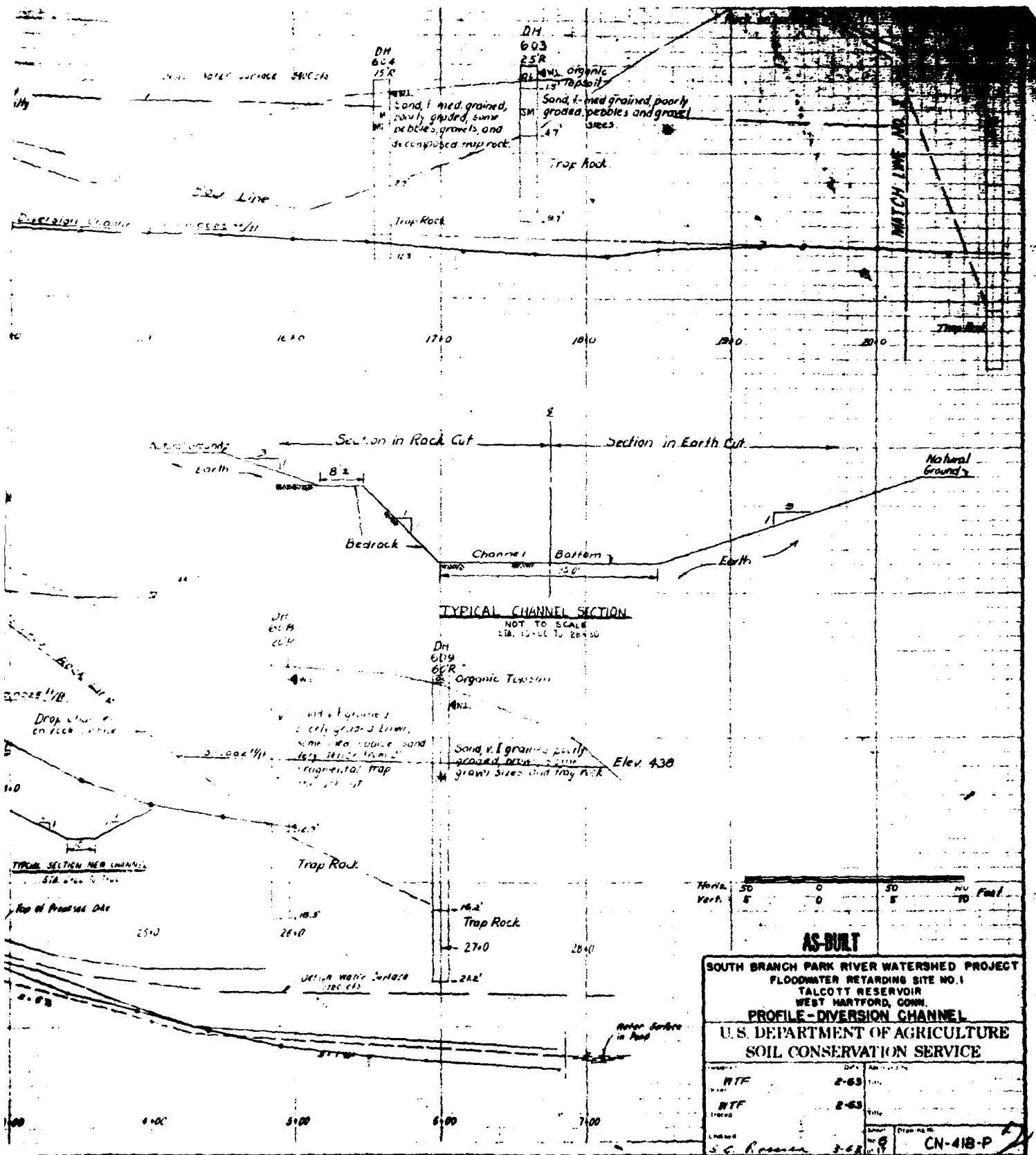


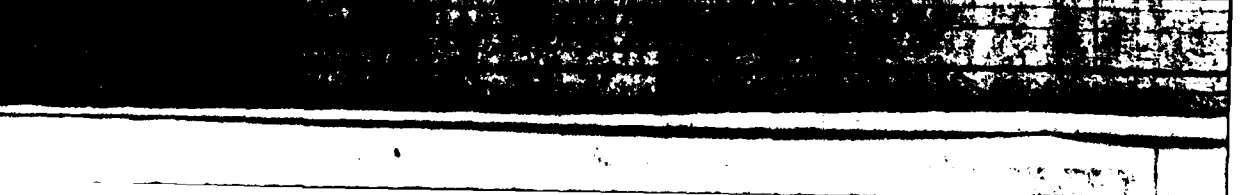
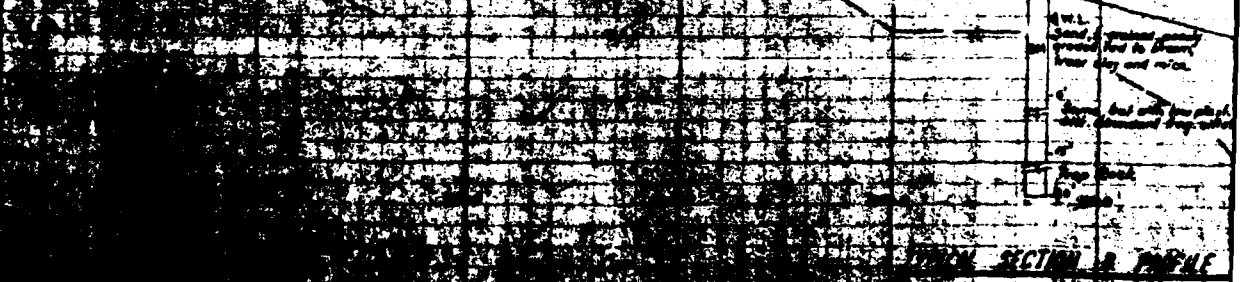
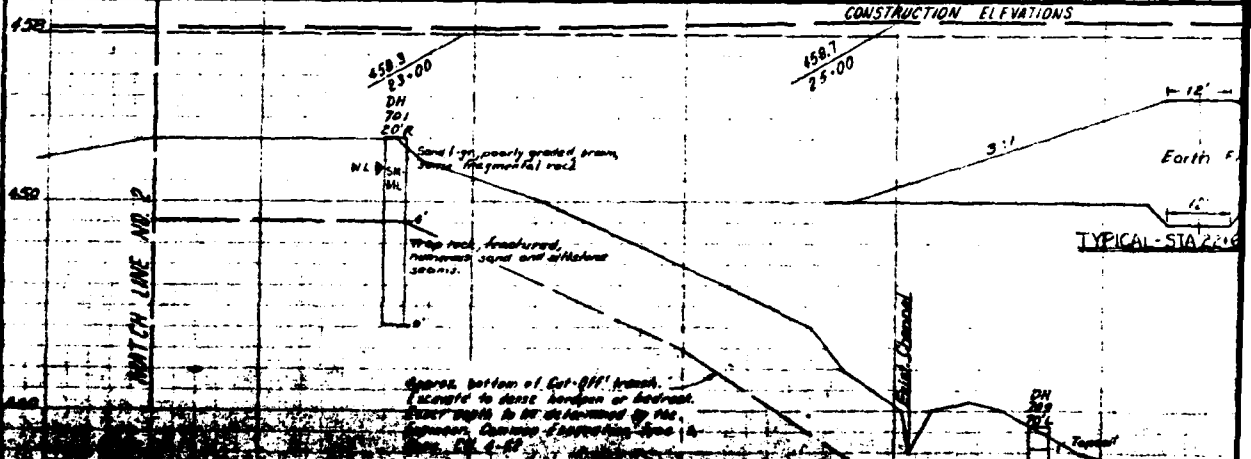
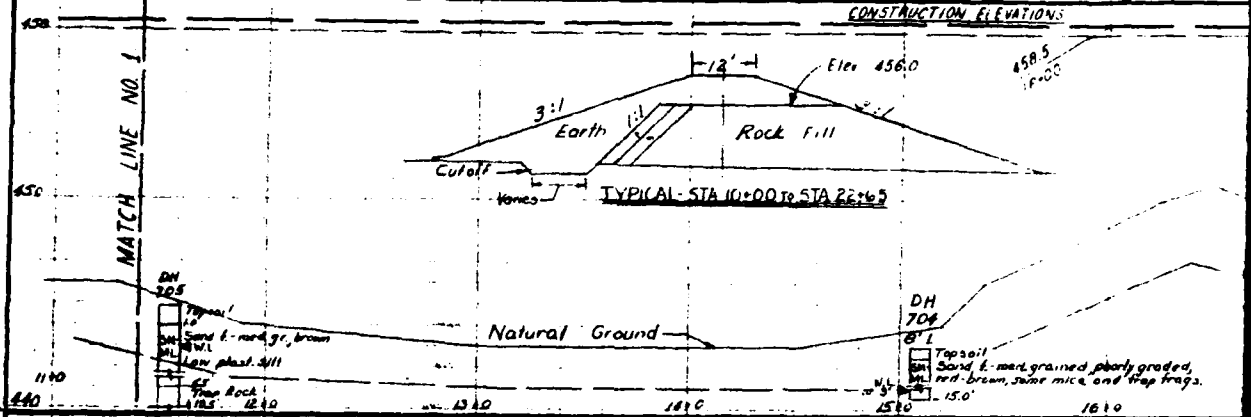
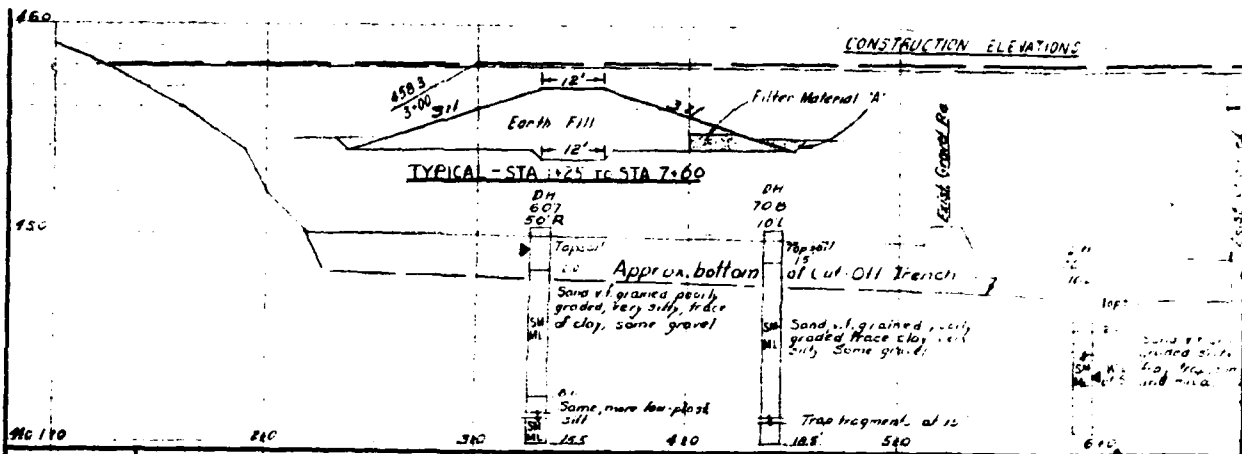
NOTES

1. Horizontal and Vertical Control are referenced to Metropolitan District Datum.
2. Clearing and Grub 25' outside limits of proposed work or as otherwise directed.
3. Grubbing shall occur burning of trees and brush, stump materials from the clearing and grubbing may be wasted at upstream toe.
4. Clearing & Grubbing limits are approximate.









Approximate Limits of old
channel and dam. Old channel
and dam to be removed. Actual
quantity to be removed to
be determined by the Engineer.
Common Excav. Type a Spec. CN-4-62

12' 18' 3:1 3:1 18" 18"

Earth Fill

Rock

Typical - STA 7160 to STA 7165

Natural Ground

Match Line No. 1

Topsoil

Sand, fine-grained, poorly graded,
some med.-coarse sand

Same, trace clay

Gravel and frag. rock

Tuff

Road Grade Line

ACTION ELEVATIONS

458.5
16+00

DH 704

Topsoil
Sand & mud grained, poorly graded,
red-brown, some mica and frag frags.

150'

160

170

DH 703

Sand & clay
Poorly graded
trace clay

East Channel

Approx. Bottom of Cut-Off Track 7

180

190

DH 702

MWL
Silt, fine-grained, poorly graded, organic material
40'
Same, with low plastic silt, same frag. rock
110'
Trap
120'

200

210

455.3
21+00

MATCH LINE NO. 2

SECTION ELEVATIONS

Top surface: 456.1 / 28+00

Embankment slopes: 3:1 (left), 2:1 (right)

Earth Fill

Typical: STA 22+63 to STA 30+00

See Drainage Details on Sheet 9 of 11

Emergency Sidewalk No. 2

6" Semi-compacted Kpsail, Spec. CN20-61

90'

Graphical Scales

80' Horiz. / 5' Vert.

Natural Ground

Topsoil

Sand, fine grained, poorly graded, abundant flap inverts.

[illegible]

CONSTRUCTION PLAN

Emergency Spillway 14 425

me to stone, silt
to
boulders

DAM

Some, less out

Some, coarse gravel

Some, coarse gravel

Emergency
Spillway

Section shown to the right of the dam
is not to be used for the
purpose of the dam

Water

Level Elevation

If sufficient material
available, the bottom of the
spillway should be raised to
the level of the main dam.



TYPICAL - MAIN DAM

DL
0.1

Sand, fine-grained,
poorly graded,
some med-coarse sand,
some decomposed siltstone
and trap rock fragments.

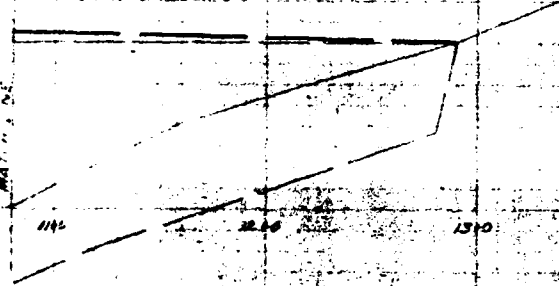
Sand, fine-grained,
poorly graded, dark
brown, some mica,
slightly plastic,
some pebbles, silt
stone and trap rock
fragments.

MATCH LINE

Hydro bottom of spillway
is to be raised to the level
of the main dam. The
depth to be determined by the
engineer. (See Section Type 6
Sheet 14 & 62)

400

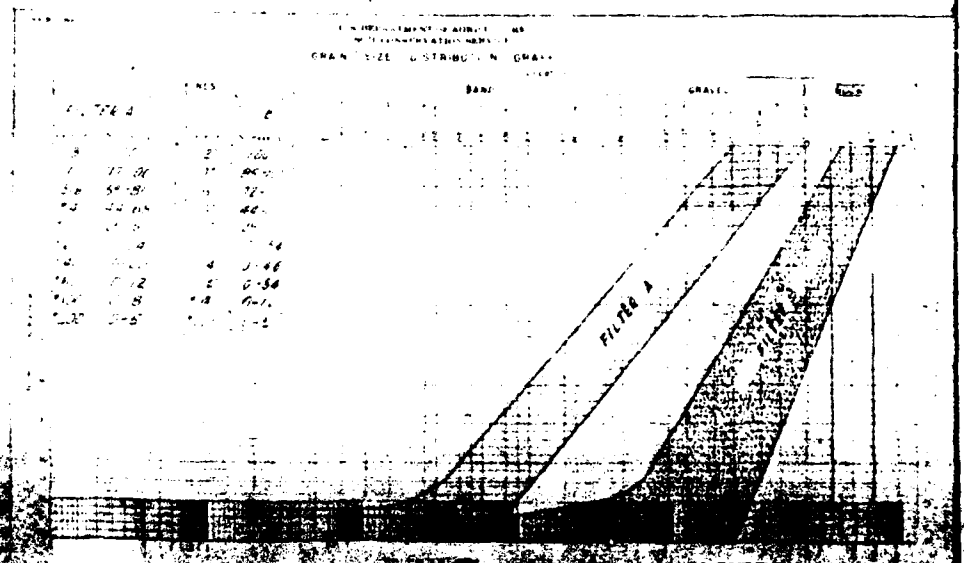
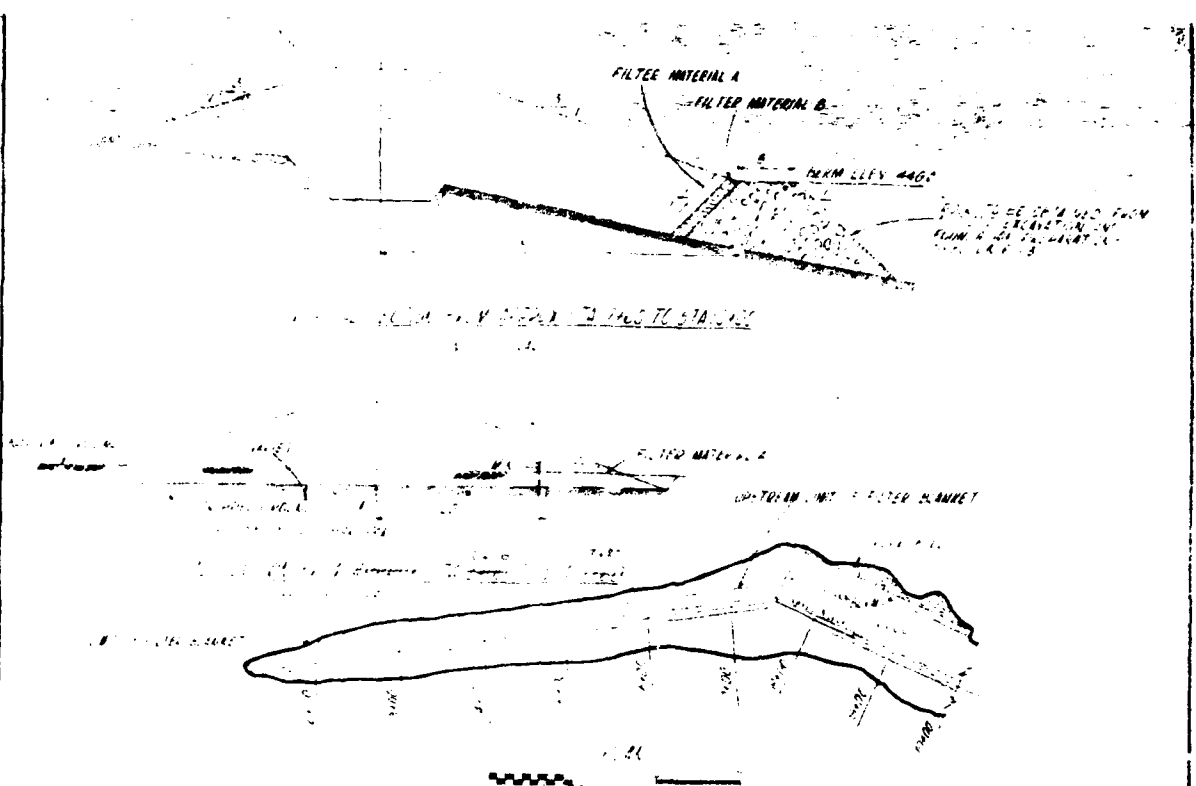
450



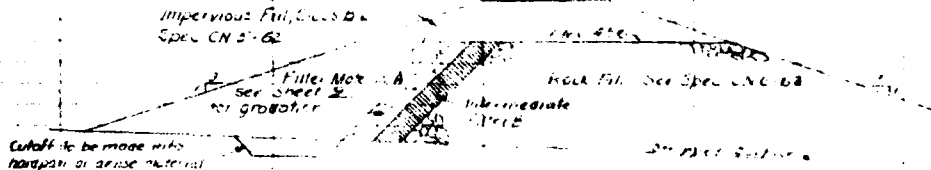
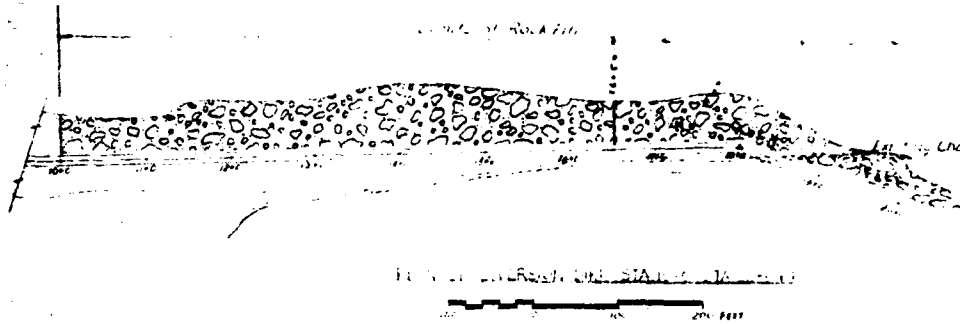
Graphical Scale

AS-BUILT

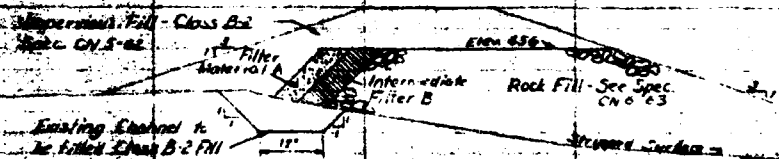
WATER RESOURCES
DIVISION
BUREAU OF REVENUE
AND TAXATION
PROFILES
BUREAU OF REVENUE
AND TAXATION



NOTE: 1. This section is for the purpose of showing the relative positions of the various materials and the general character of the work. It is not to be used for the purpose of determining the exact quantities of materials to be used.

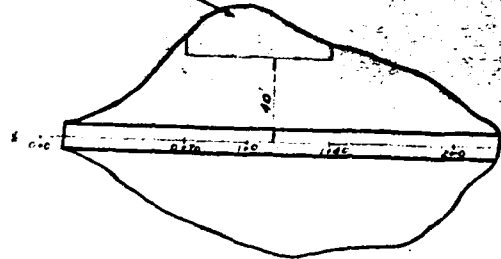


TYPICAL SECTION STA. 10150 TO STA. 10155 (APPROX.)
NOT TO SCALE



TYPICAL SECTION STA. 10150 TO STA. 10155 (APPROX.)
NOT TO SCALE

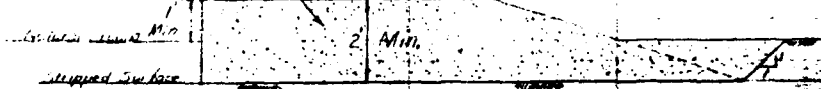
Filter Blanket



PLAN OF DIKE NO. 2

40 20 10 0 40 80 FEET

Filter Material A - Sheet 2
for gradation

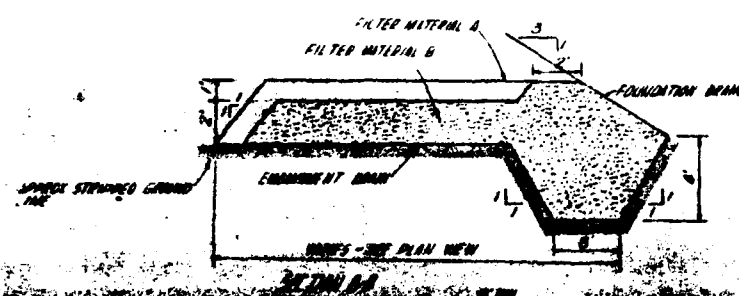
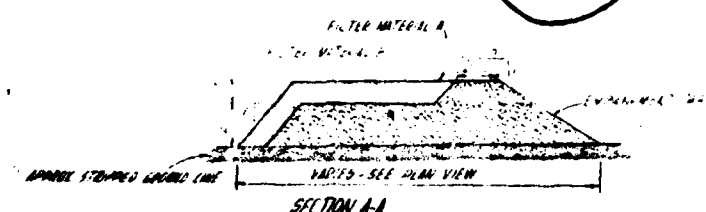
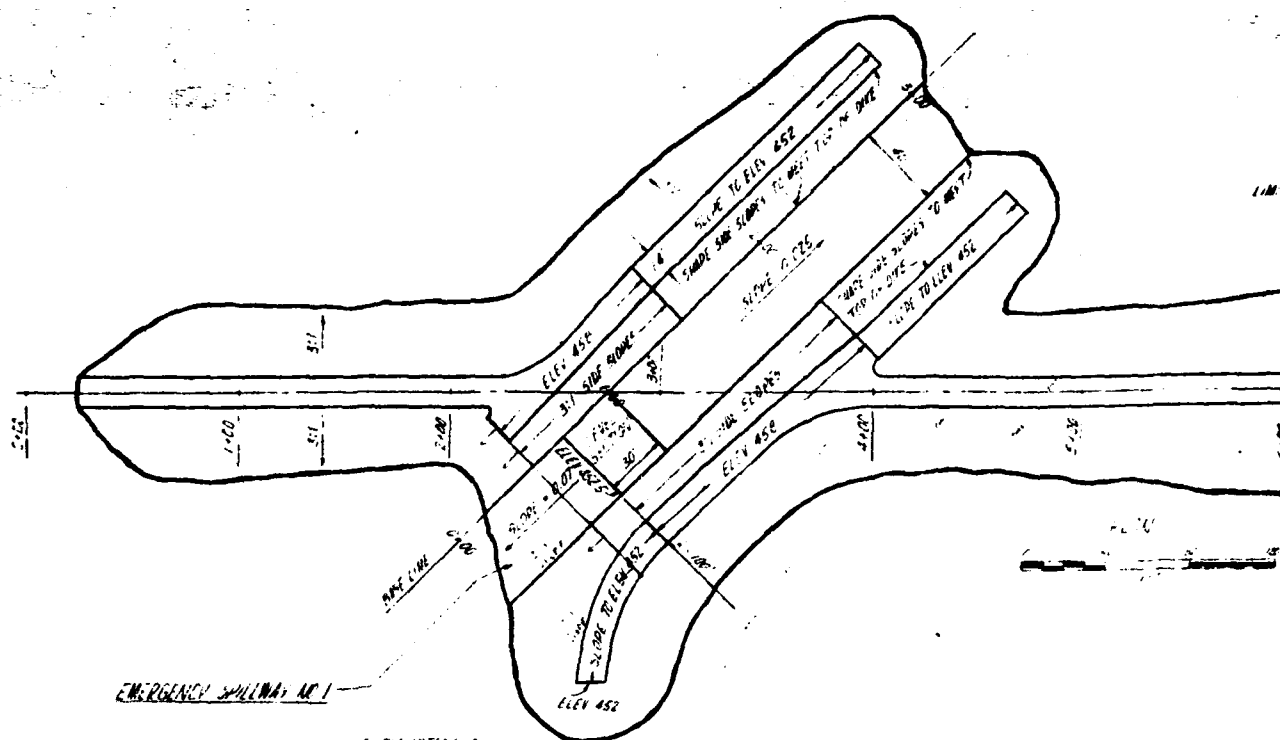


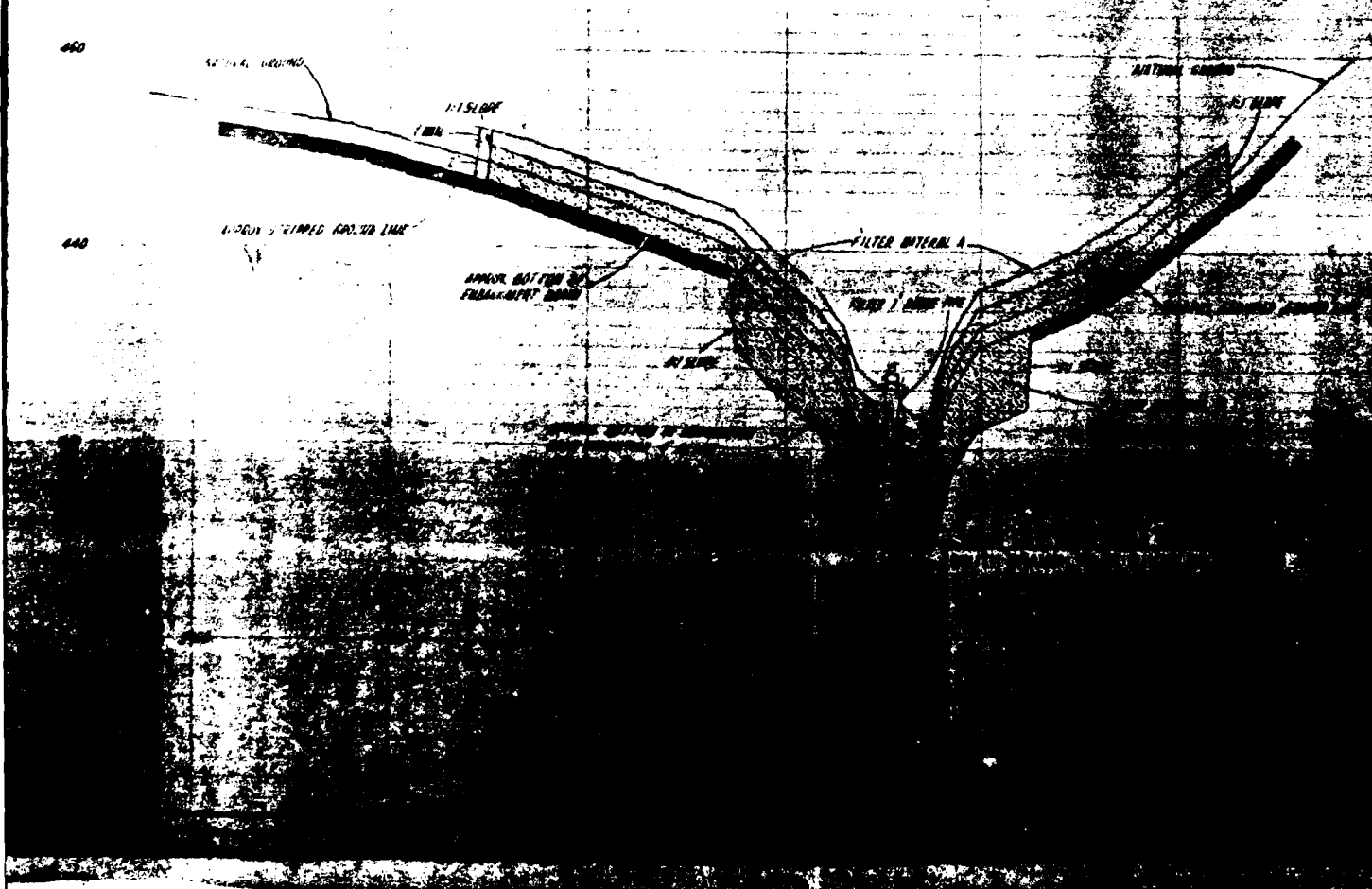
TYPICAL SECTION OF DIKE NO. 2 FILTER BLANKET
NOT TO SCALE

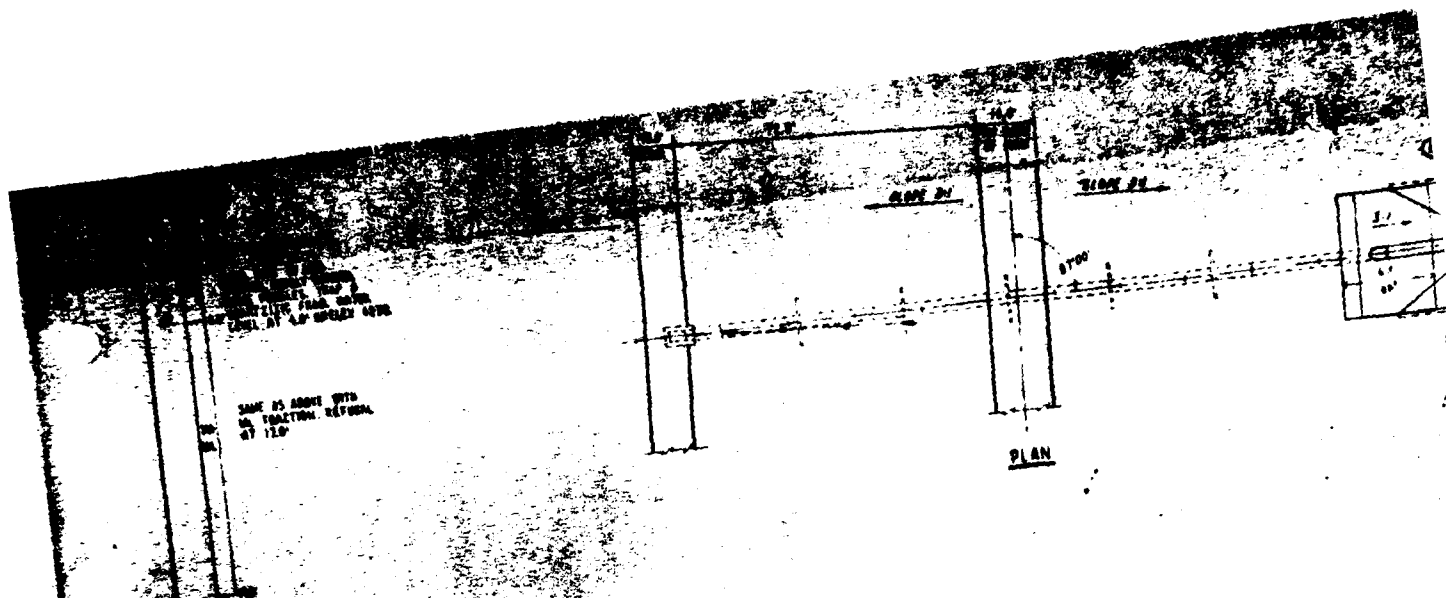
AS-BUILT

SOUTH BRANCH PARK RIVER WATERSHED PROJECT
FLOODWATER RETARDING SITE NO. 1
TALCOTT RESERVOIR
WEST HARTFORD, CONN.
SEEPAGE DRAIN DETAILS-DIKES
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed by J. T. P.	Checked by J. T. P.	Reviewed by J. T. P.
Drawn by J. T. P.	Field Notes J. T. P.	Remarks J. T. P.







DH-303
ELEV. 433.0

TOPSOIL
1/2\"/>

1/2\"/>

TRAP BEDROCK

1 OF 4\"/>

30\"/>

SECTION 200 TO
BE REMOVED

REIN. CONCRETE
CLASS \"B\" TYPE I
DETAILS, SHEET 11

TRASH RACK
DETAIL, SHEET 11

RISEN CRIST
ELEV. 435.0

UPPER
ELEV. 434.0

BRIDGE PLATE
DETAILS, SHEET 11

PLUMB ELEV. 434.0

SPROUT RING
WALL SYSTEM
DETAILS, SHEET 11

CONC. CRADLE
CLASS \"B\" TYPE II
DETAILS, SHEET 11

15\"/>

TOP OF DI
ELEV. 431

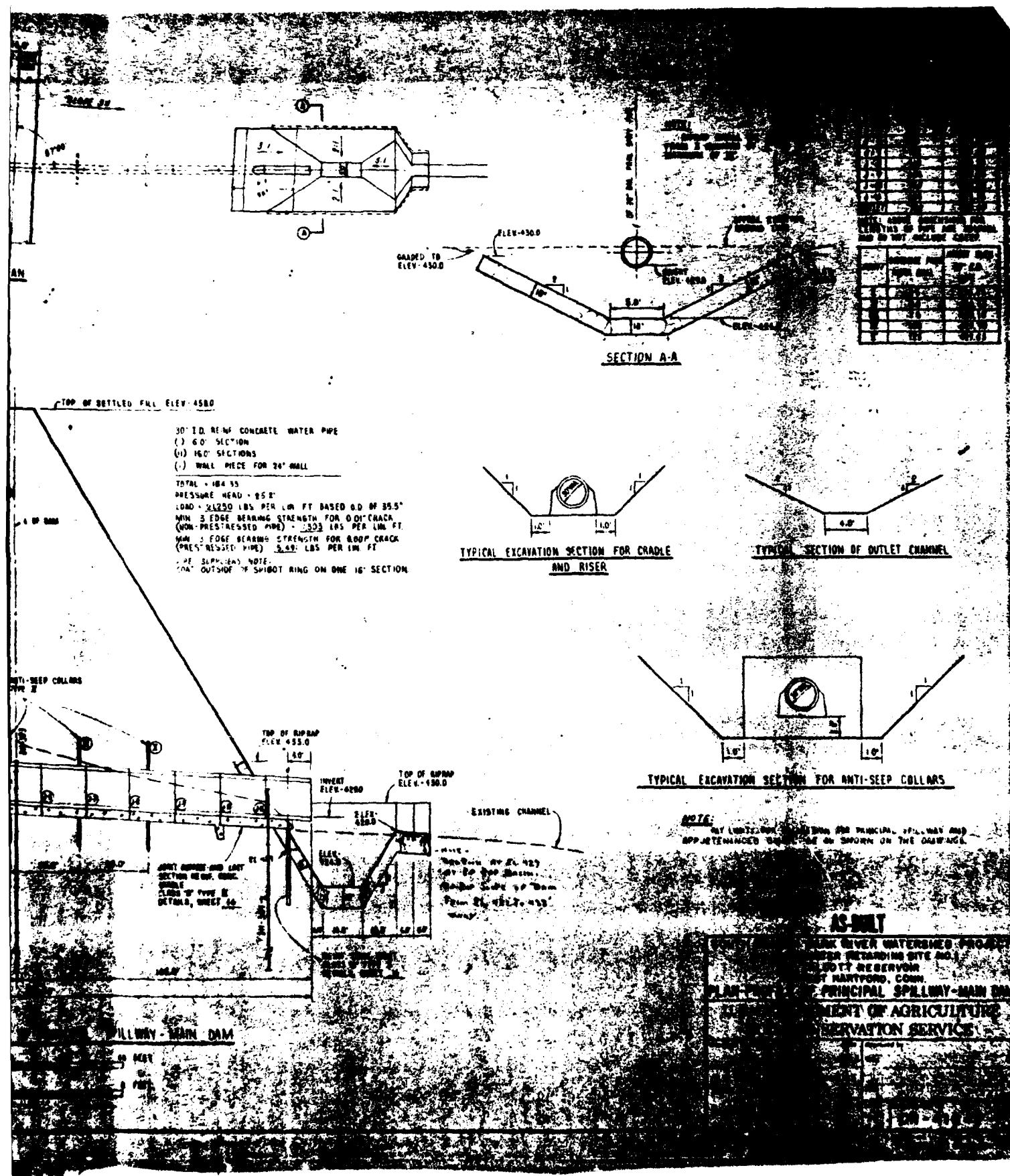
DH-305
ELEV. 430

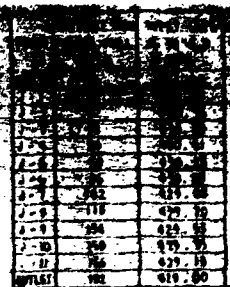
TOPSOIL

PROFILE 20\"/>

HORIZ

VERT





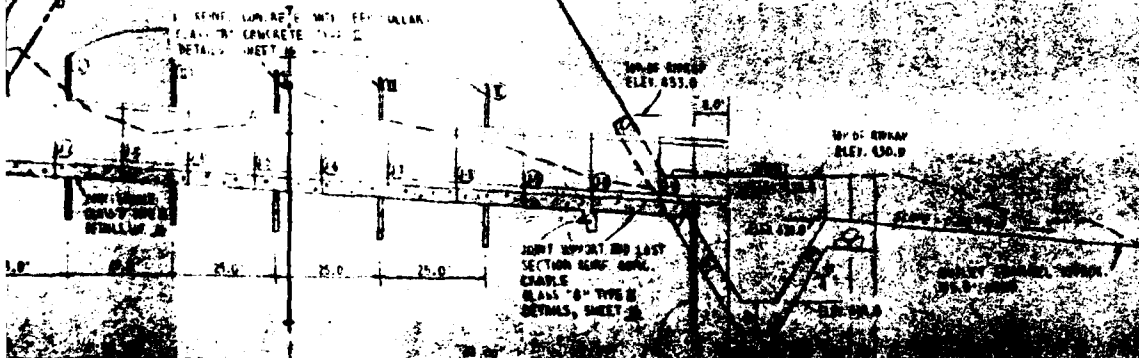
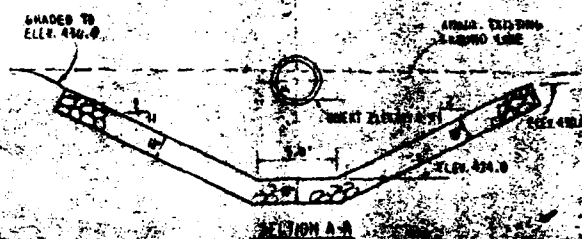
NOTE: ABOVE DIMENSIONS FOR
LENGTHS OF PIPE ARE NOMINAL
AND DO NOT ALLOW CREEP.

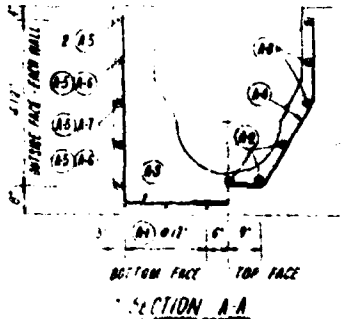
PORT	WAGNET FURN	WAGNET FURN	WAGNET FURN
1	5	5	5
2	10	10	10
3	15	15	15
4	20	20	20
5	25	25	25



5" ID. 4000 PSI. CONCRETE WATER PIPE
(1) 6' SECTION
(2) 10'0" SECTIONS
WT. PIPE FOR 24" MANH
TOTAL = 104.35'
PIPE WRE WEAR = 25.4'
LOAD = 2,100 LBS. PER LIN. FT. BASED O.D. OF 36.5"
MIN. 1" EDGE BEARING STRENGTH FOR 0.01" GARCH
INUM PRESTRESSED PIPE = 7,300 LBS. PER LIN. FT.
MIN. 1" EDGE BEARING STRENGTH FOR 0.001" GARCH
(PRESTRESSED PIPE) = 8,000 LBS. PER LIN. FT.

PIPE SUPPLIERS NOTE:
COAT OUTSIDE OF SPIGOT RING WITH
CONCRETE ON ONE 16" SECTION.





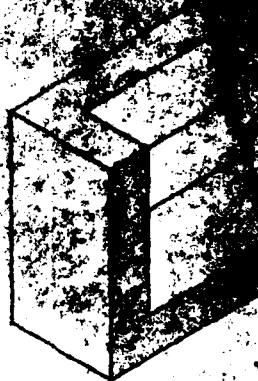
GENERAL NOTES:

ALL CONCRETE SHALL BE CLASS "B" & OF FIVE PARTS PORTLAND CEMENT TYPE 1A OR TYPE 2 WITH TWO PARTS SAND. AGGREGATE SHALL BE USED.

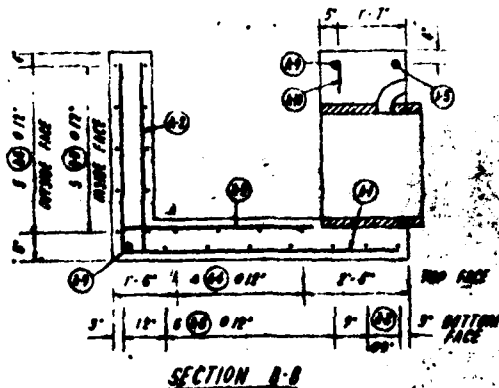
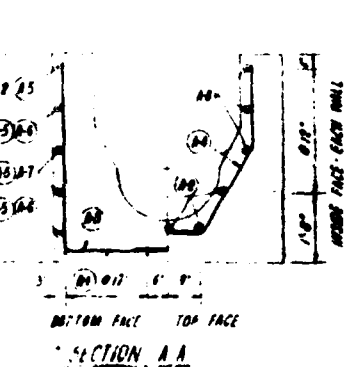
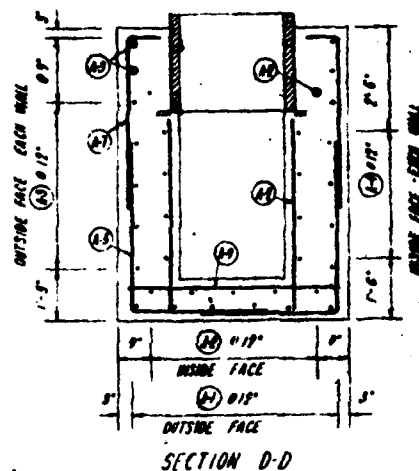
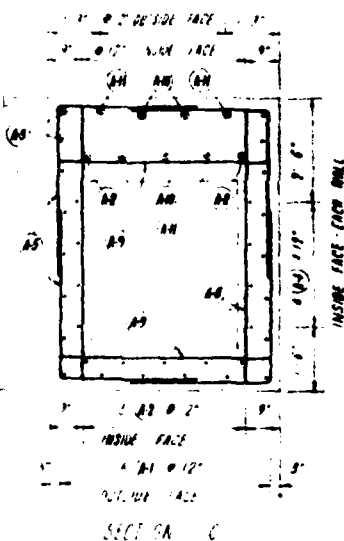
ALL REINF. STEEL TO BE LAPPED A MIN. OF 36 BAR DIA.

ALL REINF. STEEL PLACED IN CONCRETE Poured AGAINST THE FORMING SHALL HAVE A MIN. OF 3" CLEAR COVER. WHERE FORMING NOT USED BARS SHALL HAVE A MIN. OF 2" CLEAR COVER.

ALL EXPOSED EDGES OF CONCRETE TO HAVE A 1/4" CHAMFER UNLESS OTHERWISE NOTED.



HALF ISOMETRIC



1 2 3 4 5 6 7 8 9 10 11 12

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

WATER RESOURCES DIVISION
FLOOD CONTROL DISTRICT NO. 1
TALAMON DIVISION
WESTERN DISTRICT
RIVER DETENTION BASIN NO. 1
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

DATE: 10/1/54
BY: J.H. GARDNER
CHECKED: J.H. GARDNER
APPROVED: J.H. GARDNER

STEEL SCHEDULE									
NO.	LOCATION	SIZE	LENGTH	TYP.	A	B	C	TOTAL FT.	
1	USER	6	5	11-0	2	4-6	6-6	66.00	
2		4	5	4-6	1			54.00	
3		4	5	7-0	2	4-6	5-4	104.67	
4		4	5	6-0	3	4-0	8-4	48.30	
5		2	5	7-5	2	4-1	3-4	89.66	
6		4	5	4-0	1			2.33	
7		4	5	4-0	1			11.52	
8		4	5	5-4	1			54.00	
9		4	5	0-4	1			2.22	
10		4	5	11-0	1			4.00	

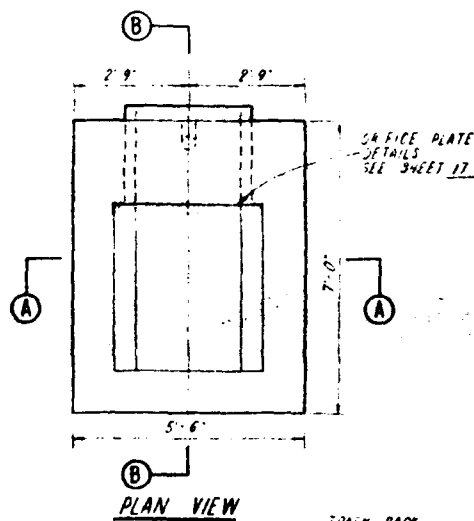
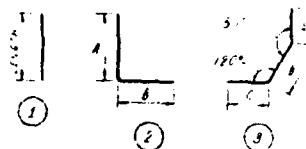
QUANTITY SUMMARY - THIS SHEET ONLY

STEEL
 NO. 5 BARS 488.68 LBS. FL. 509.59 LBS.
 CONCRETE
 CLASS "B" TYPE I 4.9 CUYDS

GENERAL NOTES:

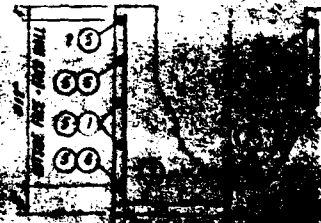
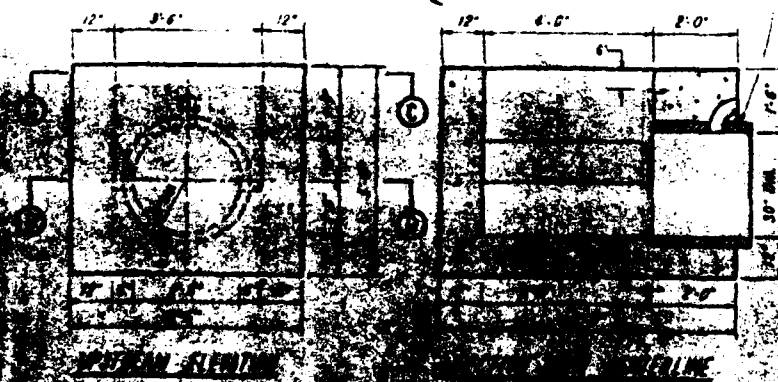
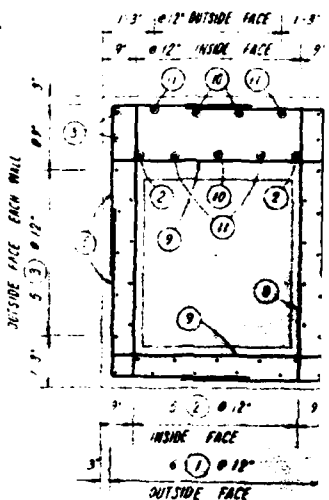
1. ALL CONCRETE SHALL BE CLASS "B" PORTLAND CEMENT TYPE 3A 0 MIXTURE SHALL BE USED.
2. ALL REINF. STEEL TO BE LAYED IN ACCORDANCE WITH THE MIN. REQUIREMENTS OF THE A.C.I. CODE.
3. ALL REINFORCED EDGES OF CONCRETE SHALL BE NOTED.

BAR TYPES



TRASH RACK
 DETAIL SHEET 17

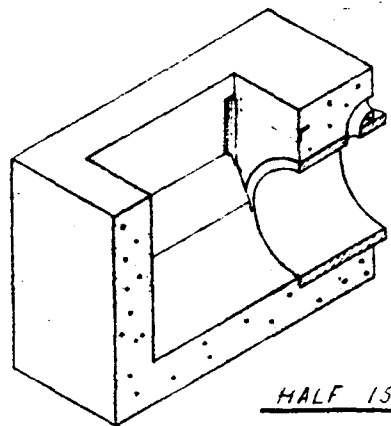
SPIGOT RING
 WALL FITTING
 DETAIL SHEET 17



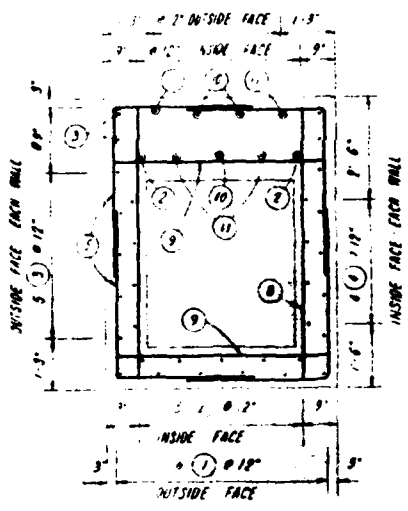
7 ONLY

GENERAL NOTES:

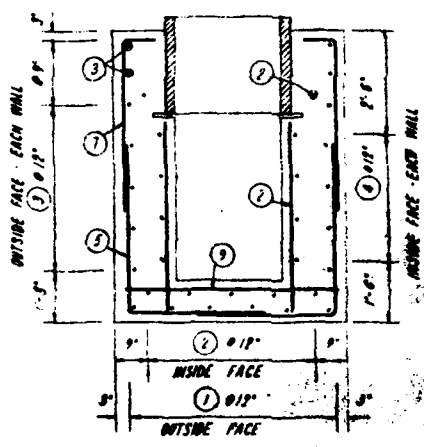
1. CONCRETE SHALL BE CLASS "B" & OF THE TYPE NOTED.
2. PORTLAND CEMENT TYPE 1A OR TYPE I WITH AN AIR-ENTRAINED MIXTURE SHALL BE USED.
3. ALL REIN. STEEL TO BE LAPPED A MIN OF 30 BAR DIA.
4. REIN. STEEL PLACED IN CONCRETE POURED AGAINST THE FORMS SHALL HAVE A MIN OF 3" CLEAR COVER, WHERE FORMS ARE USED. BARS SHALL HAVE A MIN OF 8" CLEAR COVER.
5. ALL CORNERS OF CONCRETE TO HAVE A 90° CHAMFER.



HALF ISOMETRIC

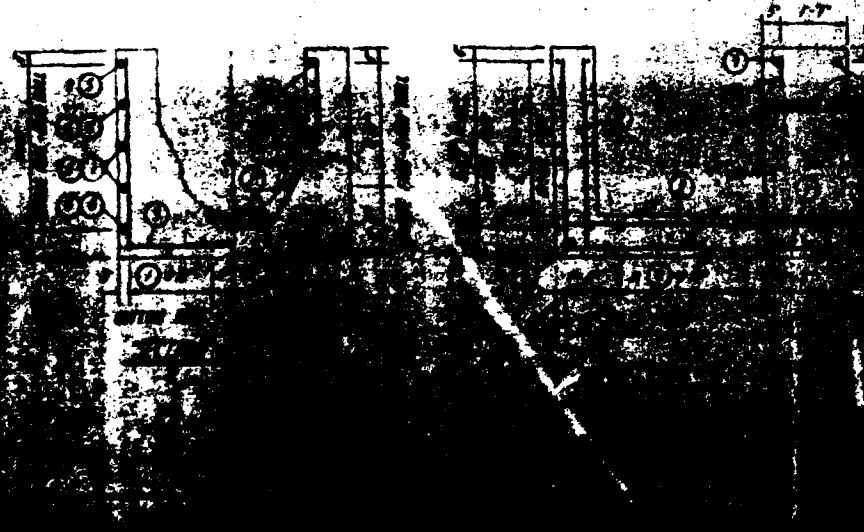


SECTION C-C



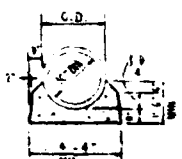
SECTION D-D

16 TWO
FEET 17

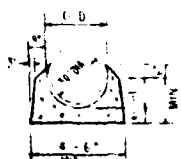


16 TWO
FEET 17

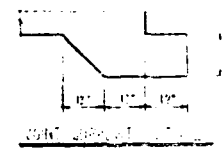
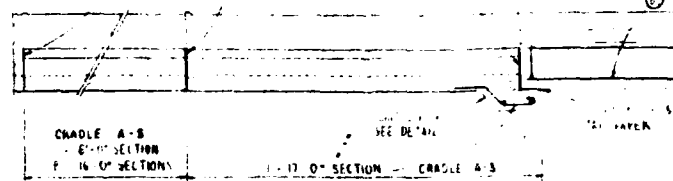
THE CONCRETE CRADLE WILL HAVE A JOINT AT EACH PIPE JOINT. THE PREFORMED BIT TYPE JOINT FILLER PER SPEC. A TM D-44 BY OR D-44A-53 WILL BE PLACED WITHIN CRADLE SECTIONS.



DETAIL OF NON-REINFORCED CONC.
CRADLE (A-5)

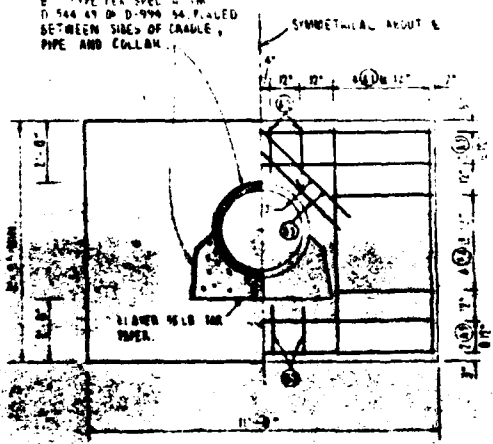


DETAIL OF REINFORCED CONC.
CRADLE (A-1)

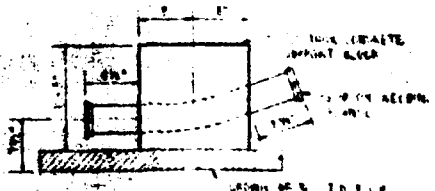


DETAIL OF CONCRETE CRADLE AND JOINT

4" PREFORMED JOINT FILLER
BY TYPE PER SPEC. A TM
D-44A BY OR D-44A-53 PLACED
BETWEEN SIDES OF CRADLE,
PIPE AND COLLAR.



DETAIL OF REINFORCED CONCRETE ANTI-SEEP COLLAR



DETAIL 14

AD-A144 588

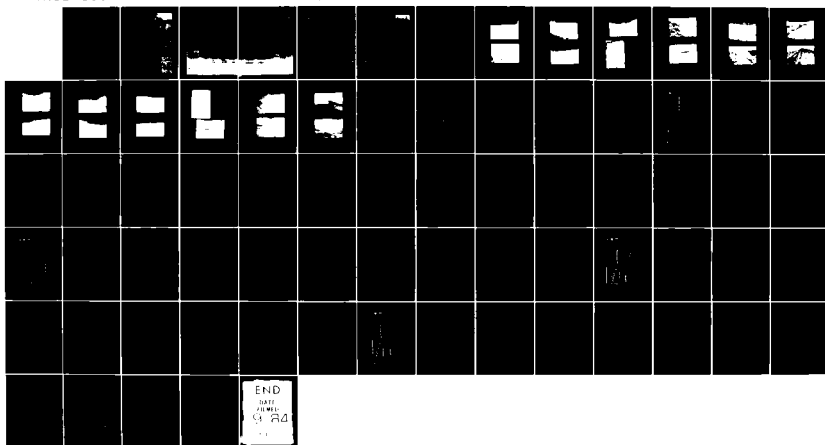
NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS
TALCOTT RESERVOIR DAM, (U) CORPS OF ENGINEERS WALTHAM
MA NEW ENGLAND DIV MAY 81

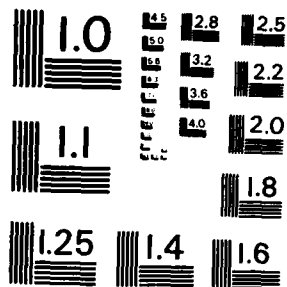
2/2

UNCLASSIFIED

F/G 13/13

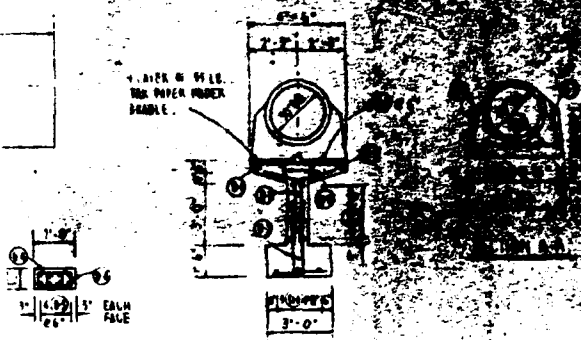
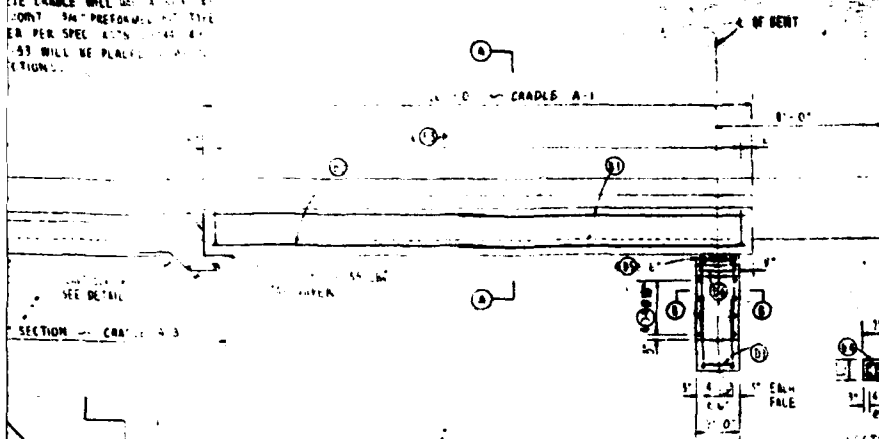
NL



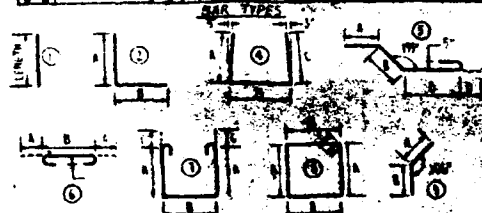
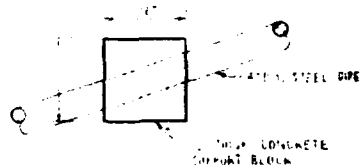


MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TE LEADLE WILL USE A 10" X 10" X 1/2" ALUMINUM PLATE PREFORMED WITH THE
PER SPEC 2075 1045 41
93 WILL BE PLACED IN THE
(81000)



STEEL SCHEDULE									
MARA	LOCATION	QWANT	SIZE	LENGTH	TYPE	A	B	C	TOTAL FT.
A-1	COLLAR (10)	10	4	5-8	1				142.00
A-4	W.C. & B.M.	40	4	1-6	1				120.00
A-3		40	4	20-3	1				212.00
A-4		40	4	4-6	1				144.00
A-5		40	4	8-0	1				160.00
B-1	SEAM	8	6	20-2	1				160.00
B-2		16	8	14-3	1				228.00
B-3		52	5	1-6	4	1-5	3-0	1-0	260.00
C-1	ONE WEIGHT	10	5	4-2	5	1-1	1-1	1-1	90.00
C-2		4	4	3-2	1				40.00
D-1	SEAM, P.W. & B.M.	40	6	3-2	1				160.00
D-2		16	6	20-2	1				160.00
D-3		16	6	20-2	1				160.00
D-4		16	6	20-2	1			8-0	160.00
D-5		5	4	3-2	1				40.00
D-6		4	4	3-2	1				40.00



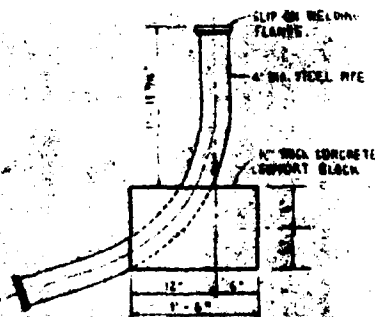
QUANTITIES - RUNS SHEET ONLY

STEEL		CONCRETE	
NO. 4 BARS	4.00 LB. LIN. FT.	NO. 4 BARS	3.50 LB. LIN. FT.
NO. 5 BARS	4.75 LB. LIN. FT.	NO. 5 BARS	3.75 LB. LIN. FT.
NO. 6 BARS	5.50 LB. LIN. FT.	NO. 6 BARS	4.00 LB. LIN. FT.
NO. 8 BARS	6.50 LB. LIN. FT.	NO. 8 BARS	4.50 LB. LIN. FT.

DETAILS FOR MAIN DAM & DIVERSION DIKE

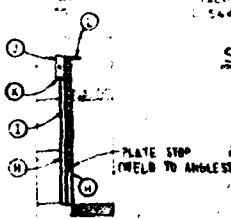
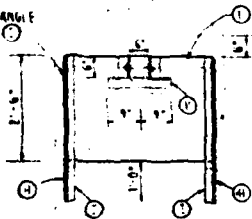
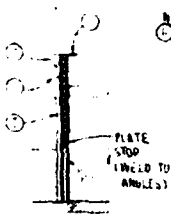
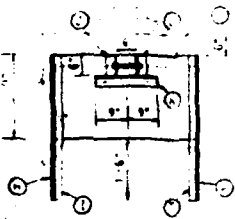
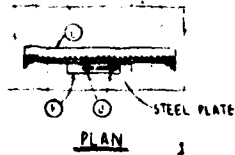
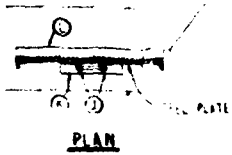
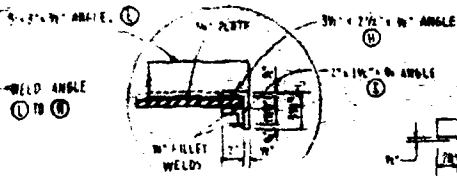
**SOUTH BRANCH PARK OVER INTERMEDIATE PARK
FLOODING DEVIATION SITE NO. 1
TALCOTT, IN DEER CREEK
WEST MONTGOMERY, CALIF.
CRADLE-COLLAR & BENT DETAIL
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE**

Page 1 of 1



DETAIL OF AIR BENT CONCRETE SUPPORT BLOCKS

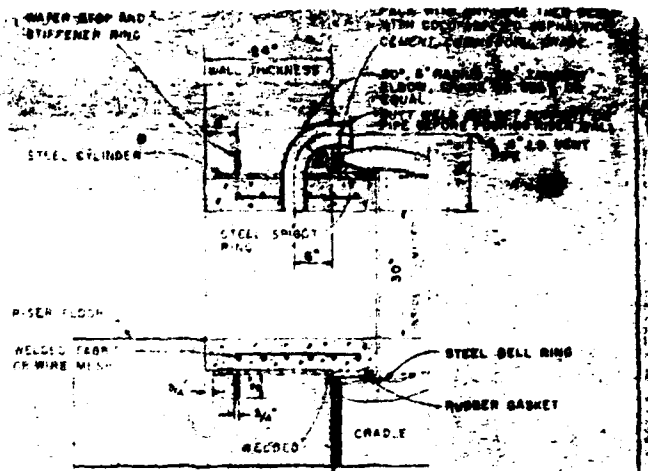
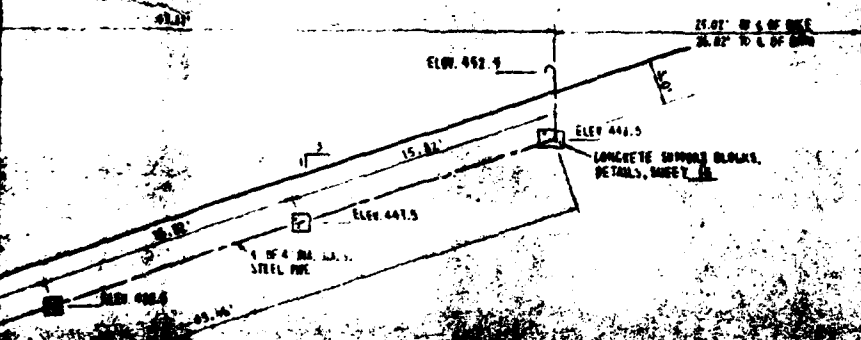




ELEVATION SECTION ALONG CENTERLINE
ORIFICE PLATE DETAILS - MAIN DAM

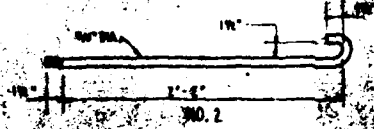
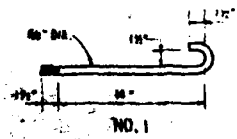
ELEVATION SECTION ALONG CENTERLINE
ORIFICE PLATE DETAILS - DIVERSION DIKE

0 1 2 3 4 FEET

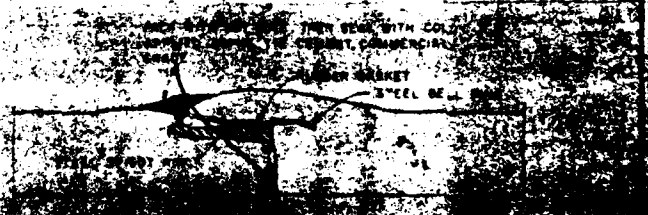


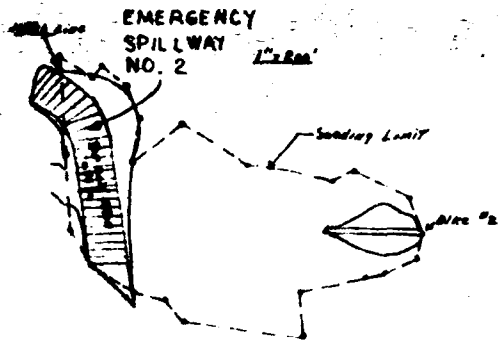
PERFORMED BY TUNOUS TYPE
JOINT LIES BETWEEN CRACKS AND
PISEA TESTS 1994-02 SP 451M
1544-49

SPIGOT RING WALL FITTING
(NOT TO SCALE)

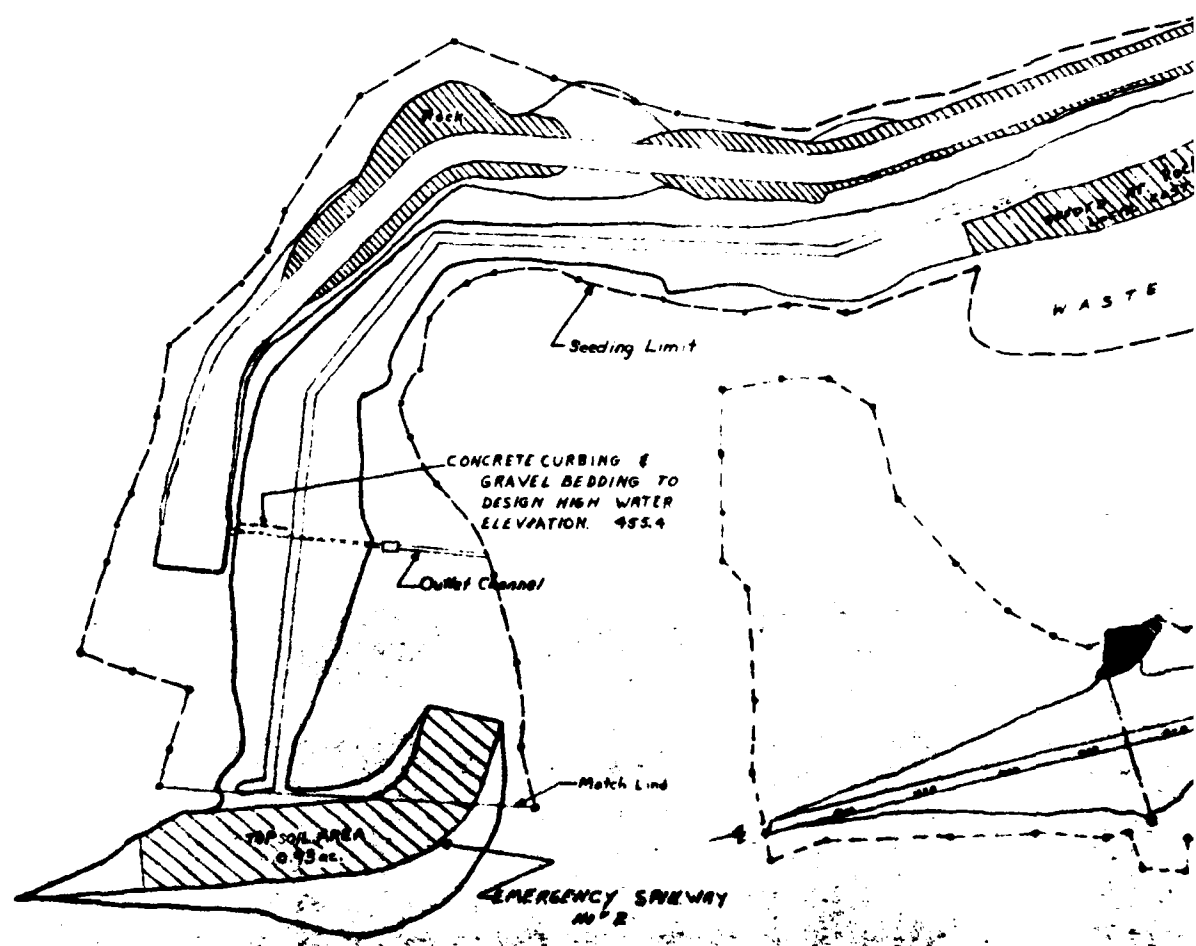


DETAILS OF GALV. HOOK BOLTS
(NOT TO SCALE)





PLAN OF DIVERSION D
1" = 100'



12.00

OUT

WASTE AREA

Total area to be seeded 36.8 ac.
SEEDS AT LOCAL COST .7 ac.

37.5 ac. Total

AS-BUILT

**SOUTH BRANCH PARK RIVER WATERSHED PROJECT
FLOODWATER RETARDING SITE NO. 1
TALCOTT RESERVOIR
WEST HARTFORD, CONN
PLAN OF SEEDING AREAS**

**U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE**

[illegible]

FORM SCS 113 (APR 78) 10000

~~PLAN OF WORK & EMERGENCY SPILLAGE NO.1~~

APPENDIX C

PHOTOGRAPHS



C-1 TOP OF DAM - LOOKING EAST
TOWARD EMERGENCY SPILLWAY



C-2 UPSTREAM FACE OF EASTERN SIDE
OF DAM - LOOKING EAST.

MAIN DAM

C-1



C-3 DOWNSTREAM FACE OF WESTERN
SIDE OF DAM - LOOKING WEST



C-4 UPSTREAM FACE OF WESTERN
SIDE OF DAM - LOOKING WEST

MAIN DAM

C-2



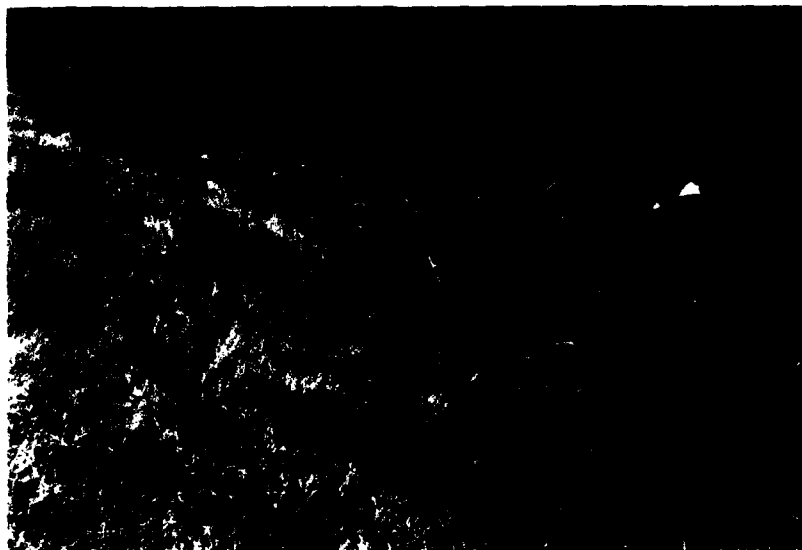
C-5 EMERGENCY SPILLWAY -
LOOKING UPSTREAM



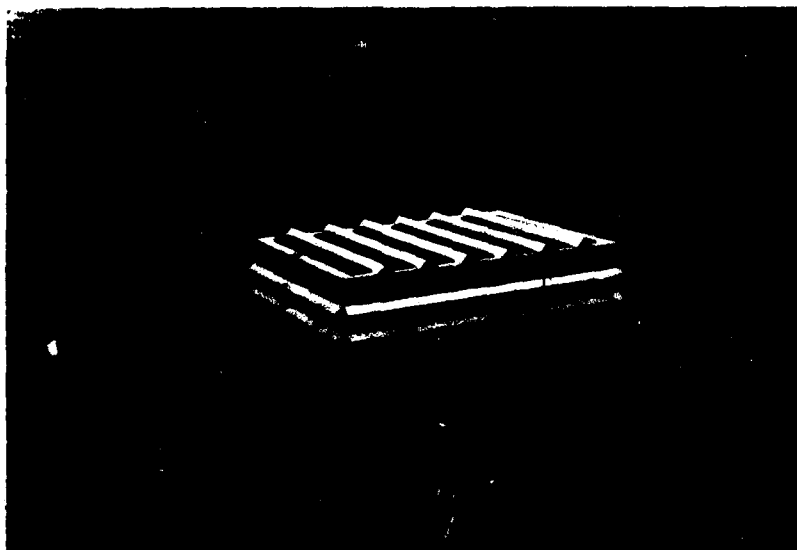
C-6 HOLE IN FLOOR OF
EMERGENCY SPILLWAY NEAR
DOWNSTREAM END

MAIN DAM

C-3



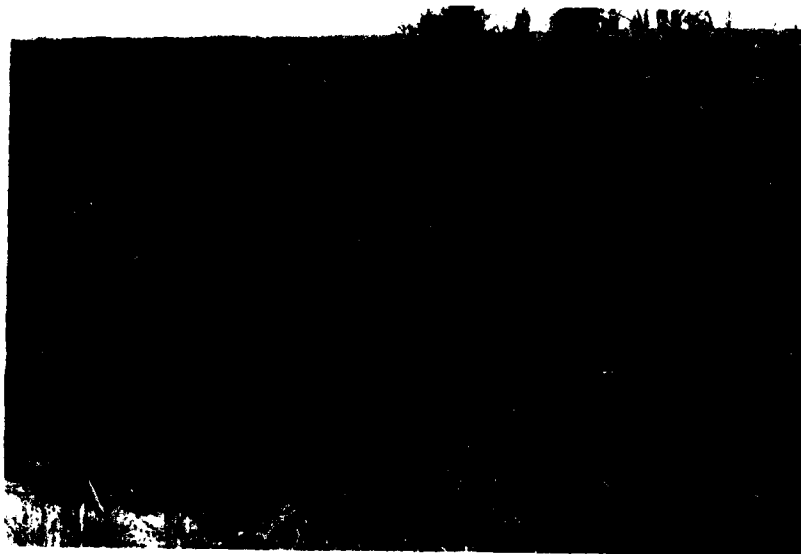
C-7 ANIMAL BURROW IN DOWNSTREAM FACE
OF WESTERN SIDE OF DAM NEAR
EMERGENCY SPILLWAY



C-8 PRINCIPAL SPILLWAY INLET

MAIN DAM

C-4



C-9 PRINCIPAL SPILLWAY OUTLET - LOOKING
NORTH. NOTE ANIMAL TRAIL ON
EMBANKMENT.



C-10 PRINCIPAL SPILLWAY OUTLET, STILLING
POOL AND DOWNSTREAM CHANNEL - LOOKING
SOUTH

MAIN DAM

C-5



C-11 TOP OF DIKE AT WEST END
OF DIKE - LOOKING EAST.
APPROXIMATELY STATION
0 TO 11.



C-12 WHEEL RUTS IN TOP OF DIKE -
LOOKING WEST. APPROXIMATELY
STATION 26 TO 22.

DIVERSION DIKE

C-6



C-13 SEEPAGE AREA AT TOE OF DOWNSTREAM
EMBANKMENT - LOOKING NORTH.
APPROXIMATELY STATION 8.



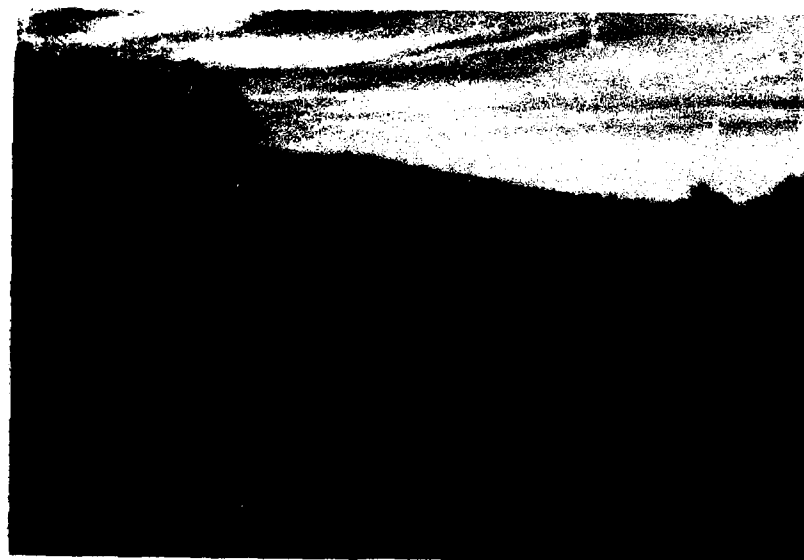
C-14 ROCK FILL AREA OF DOWNSTREAM FACE -
LOOKING WEST. APPROXIMATELY
STATION 13 TO 16.

DIVERSION DIKE

C-7



C-15 UPSTREAM FACE OF DIKE AND START
OF DIVERSION CHANNEL - LOOKING
SOUTH. APPROXIMATELY STATION
7 TO 19.



C-16 DOWNSTREAM FACE OF DIKE -
LOOKING NORTH. APPROXIMATELY
STATION 22 TO 15.

DIVERSION DIKE

C-8



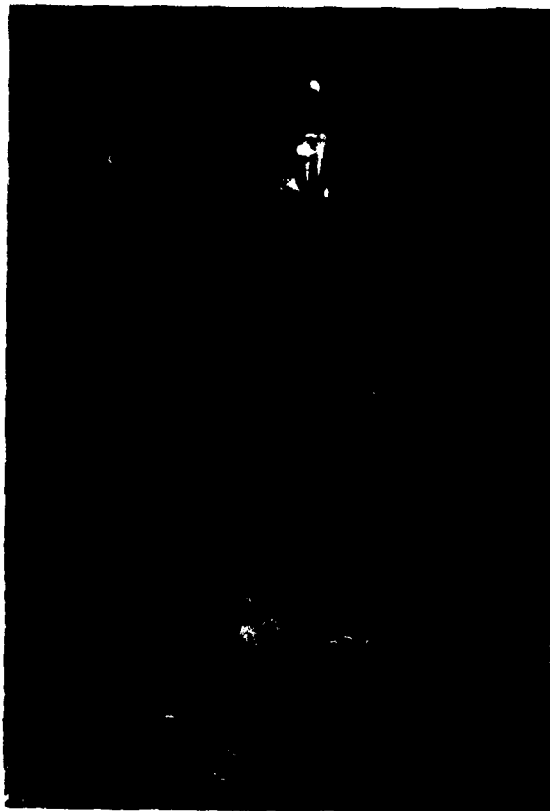
C-17 EMERGENCY SPILLWAY AND UPSTREAM
FACE OF DIKE AT EASTERN END -
LOOKING WEST. APPROXIMATELY
STATION 30 TO 23.



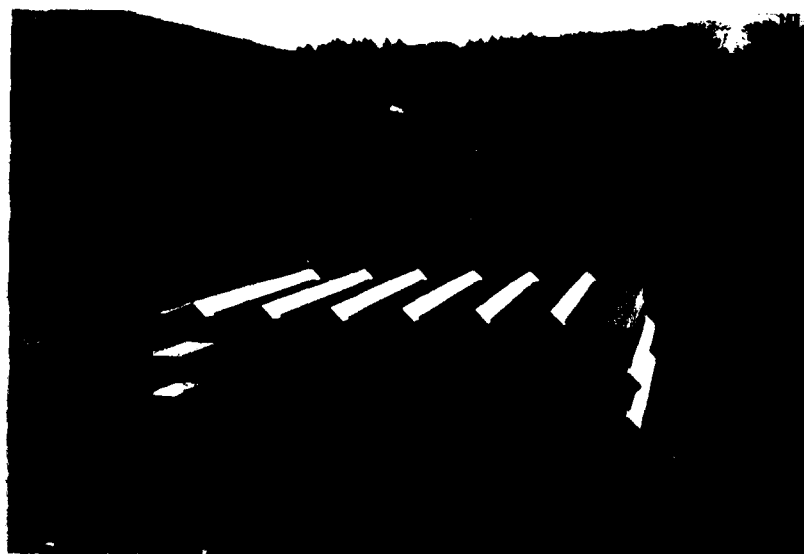
C-18 EMERGENCY SPILLWAY - LOOKING
UPSTREAM FROM DOWNSTREAM END.

DIVERSION DIKE

C-9



C-19 EROSION OF UPSTREAM FACE
BELOW PRINCIPAL SPILLWAY
VENT.



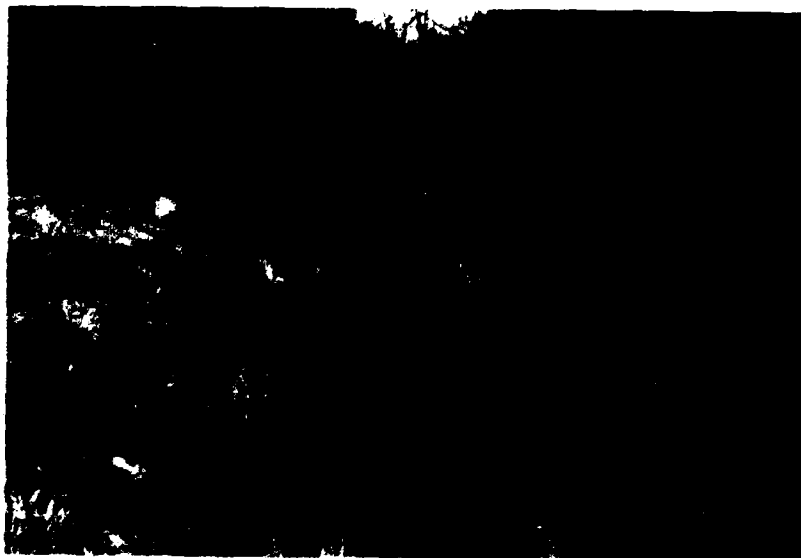
C-20 PRINCIPAL SPILLWAY INLET

DIVERSION DIKE

C-10



C-21 SLOUGHING OF DOWNSTREAM
EMBANKMENT AROUND PRINCIPAL
SPILLWAY OUTLET.



C-22 PRINCIPAL SPILLWAY OUTLET,
STILLING POOL, AND DISCHARGE
CHANNEL.

DIVERSION DIKE

C-11



C-23 TOP OF DIKE NO. 2 - LOOKING EAST

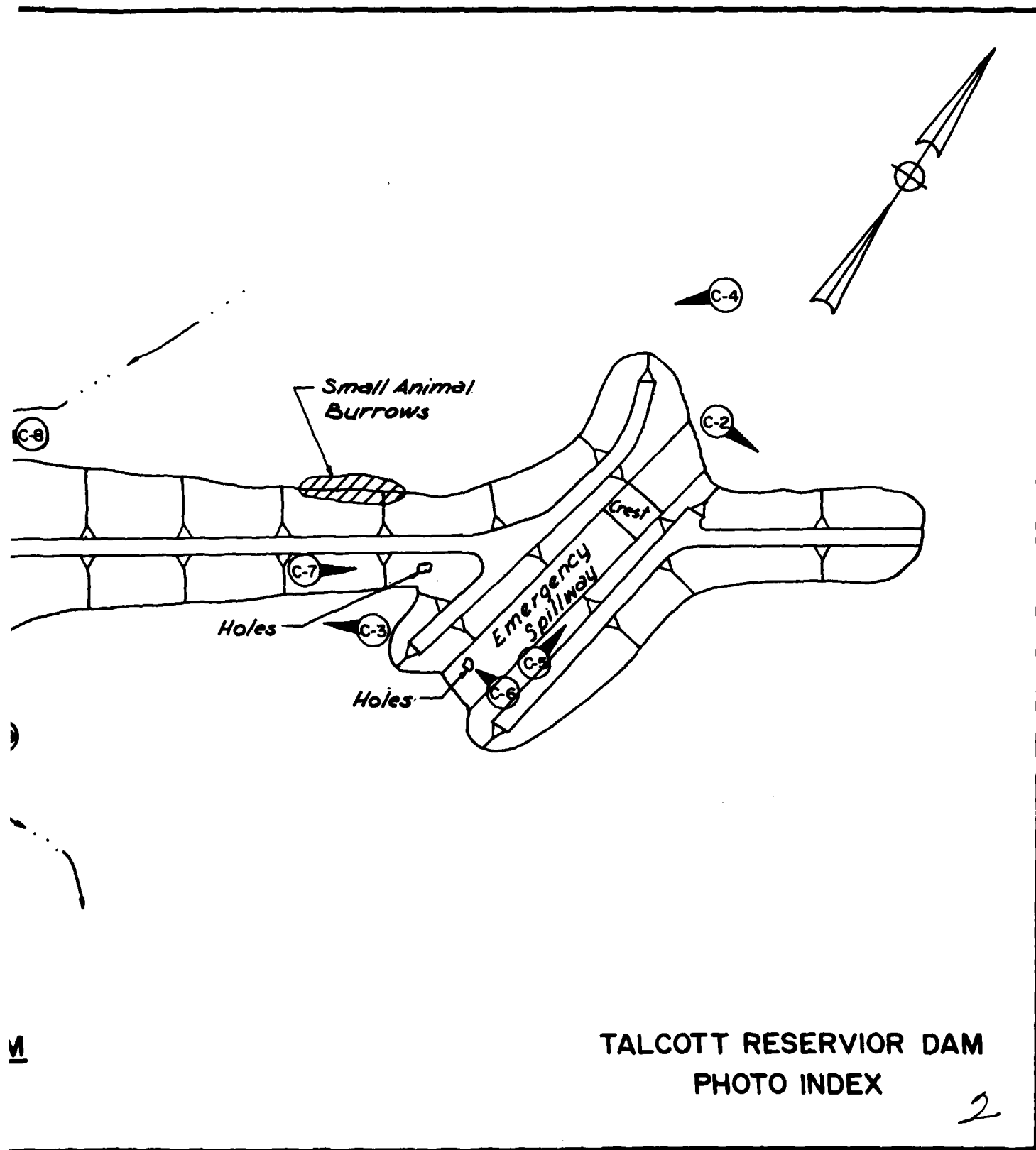


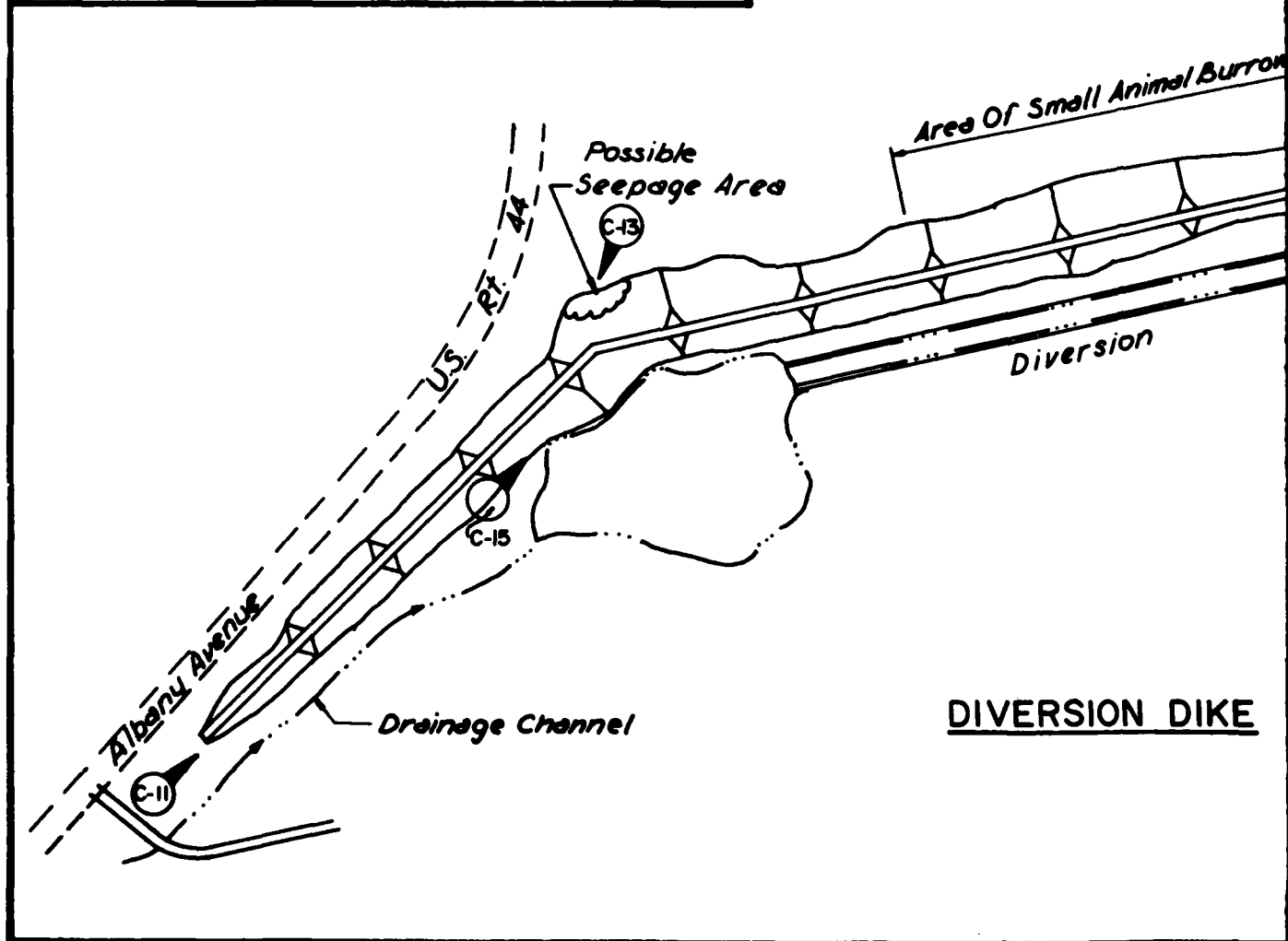
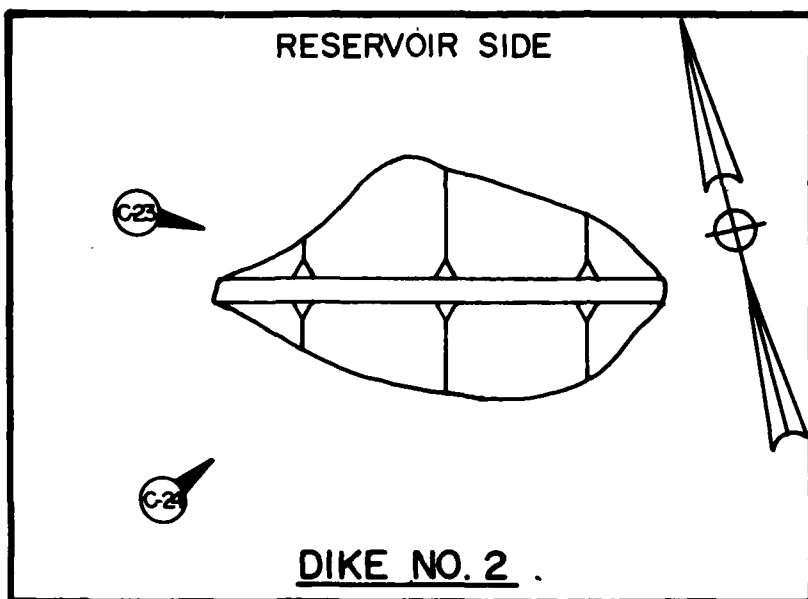
C-24 UPSTREAM FACE OF DIKE NO. 2 - LOOKING EAST

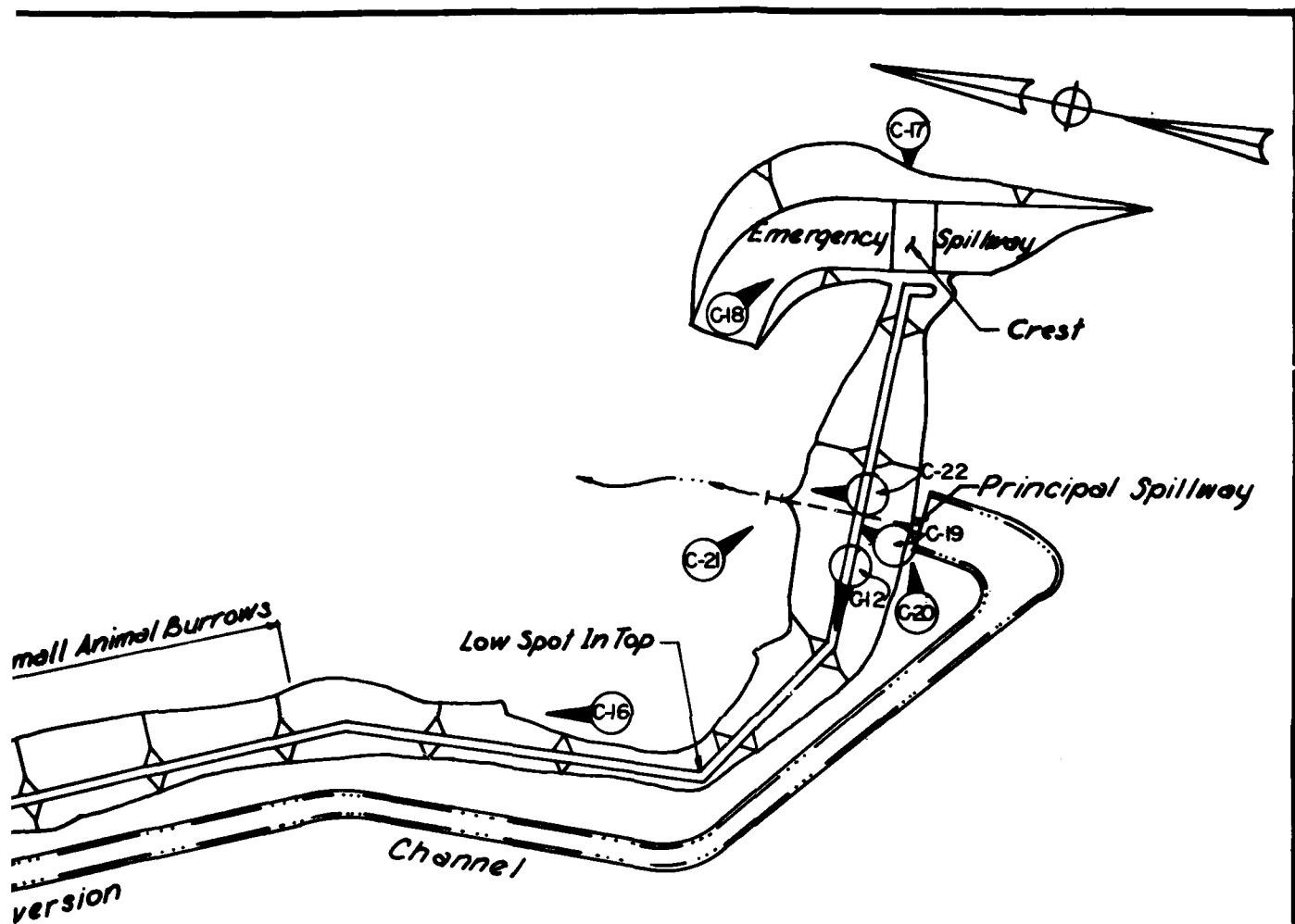
DIKE NO. 2

C-12









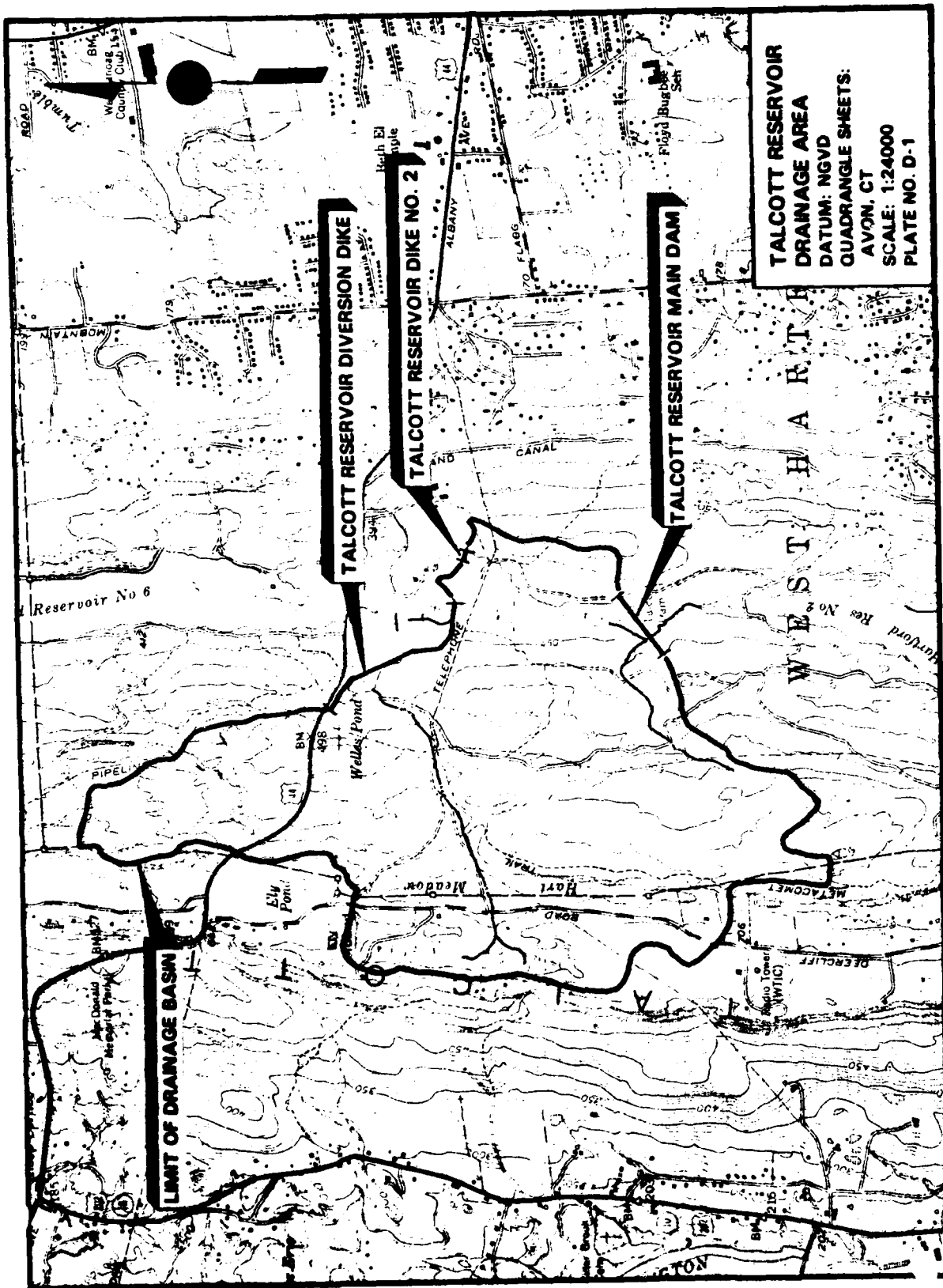
RSION DIKE

TALCOTT RESERVOIR DAM
PHOTO INDEX

2

APPENDIX D

HYDROLOGIC AND HYDRAULIC COMPUTATIONS



HYDROLOGIC AND HYDRAULIC ANALYSIS
SUMMARY SHEET

Dam Talcott Reservoir
Test Flood PMF

INFLOW HYDROGRAPH DEVELOPMENT

Drainage Area 1.61 sq. mi.

Probable Maximum Precipitation
24 hour - 200 square mile PMP 21.5 inches

Initial Railfall Loss 0 Inch
Uniform Railfall loss .1 Inch

Snyder's Lag 2.9 hours
Snyder's Peaking Coefficient .625

Test Flood Inflow 4047 CFS

PMF Inflow 4047 CFS

RESERVOIR ROUTING AND DAM OVERTOPPING

Test Flood Outflow 2666 CFS

Spillway Capacity at Top of Dam 5400 CFS (All spillways)
203 % of Test Flood

Flow Over Spillway at Test Flood 2535 CFS (Both Emergency
Spillways)

Spillway Crest Elevation	<u>452.5</u>	Feet (Emergency Spillways)
Top of Dam Elevation	<u>458.0</u>	Feet
Test Flood Elevation	<u>456.24</u>	Feet

.....
 FLOOD HYDROGRAPH PACKAGE (HCC-1)
 DAM SAFETY VERSION JULY 1978
 LAST MODIFICATION 26 FEB 79

1	A1	DAM SAFETY ANALYSIS - JOB 88-100/87	ERJ						
2	A2	TALCOIT RESERVOIR DAM - WEST HARTFORD, CT.							
3	A3	81-23-81							
4	B	75	1	0	0	0	0	2	0
5	B1	5	1	0	0	0	0	2	0
6	J	1	1	2	1				
7	J1	.5	1.0						
8	K								
9	K1	COMPUTATION OF PMF - DEVELOPMENT OF INFLOW HYDROGRAPH							
10	M	1	1.61	1.61					1
11	P	21.5	110	124	133	142			
12	T	1.71	0.029					.1	
13	W	2.9	-0.09	2.0					
14	X	1							
15	K								
16	K1	ROUTING INFLOW HYDROGRAPH THRU POND - OVERTOPPING ANALYSIS							
17	V	1	1						
18	V1	1							
19	SS	0	0.1	26.10	87.10	150.96	361.96	656.96	988.96
20	SE	431	439	436	438	440	445	450	455
21	SS	458.5	130	2.7	1.5	431.85	.67	4.9	.5
22	SD	458	2.7	1.5	4255				
23	K								

RUN DATE 02/04/81.
TIME 14.53.36.

JOB SPECIFICATION									
NO	NMR	NMIN	TDAY	IMIN	METRIC	IPLT	IPRT	INSTAN	
75	1	0	0	0	0	2	0	0	
			JOPER	NMT	LROPT	TRACE			
			5	0	0	0			

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN= 1 NRTIO= 2 LRTIO= 1

RTIOS= .90 1.00

D-4

SUB-AREA RUNOFF COMPUTATION

COMPUTATION OF PMF - DEVELOPMENT OF INFLOW HYDROGRAPH

INHYG	INMG	TAREA	SNAP	TFPSA	TRSCP	HYDROGRAPH DATA				RATIO	ISNOW	ISAME	LOCAL	JPLT	JPRF	ISAME	ISTAGE	IAUTO
1	1	1.61	0.00	0.00	1.61	0.00	0.000	0.000	0.000	0.000	0	1	0	0	0	1	0	0

IRSPC COMPUTED BY THE PROGRAM IS 0.00

LOSS DATA										
LRPDT	STKR	DLTKR	RTIOL	ERAIN	STKRS	RTIOK	STRTL	CMSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	0.00	.10	0.00	0.00

UNIT HYDROGRAPH DATA
TYPE 1.71 CP= .63 NVA= 9

RECESSION DATA

STATION	2.00	QRCSSM=	-0.05	ATION=	2.00
APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 1.94 AND M= 1.37 INTERVALS					

UNIT HYDROGRAPH 9 END-OF-PERIOD ORIGINATES, LAG= 1.70 MJURS, CP= .62 VOL= 1.00
145. 345. 293. 136. 63. 24. 14. 6. 3.

[illegible]

1.01	2.00	.01	0.00	.01	3.	1.02	15.00	39	2.04	2.74	.10	1749.
1.01	3.00	.01	0.00	.01	2.	1.02	16.00	40	7.19	7.09	.10	2892.
1.01	4.00	.01	0.00	.01	2.	1.02	17.00	41	2.65	2.55	.10	4047.
1.01	5.00	.01	0.00	.01	2.	1.02	18.00	42	2.08	1.98	.10	3011.
1.01	6.00	.01	0.00	.01	2.	1.02	19.00	43	.15	.05	.10	2670.
1.01	7.00	.03	0.00	.03	2.	1.02	20.00	44	.15	.05	.10	1520.
1.01	8.00	.03	0.00	.03	2.	1.02	21.00	45	.15	.05	.10	739.
1.01	9.00	.03	0.00	.03	2.	1.02	22.00	46	.15	.05	.10	372.
1.01	10.00	.03	0.00	.03	2.	1.02	23.00	47	.15	.05	.10	282.
1.01	11.00	.03	0.00	.03	1.	1.03	0.00	48	.15	.05	.10	189.
1.01	12.00	.03	0.00	.03	1.	1.03	1.00	49	0.00	0.00	0.00	176.
1.01	13.00	.03	0.00	.03	1.	1.03	2.00	50	0.00	0.00	0.00	164.
1.01	14.00	.13	.03	.10	5.	1.03	3.00	51	0.00	0.00	0.00	163.
1.01	15.00	.15	.05	.10	19.	1.03	4.00	52	0.00	0.00	0.00	143.
1.01	16.00	.19	.09	.10	41.	1.03	5.00	53	0.00	0.00	0.00	133.
1.01	17.00	.29	.08	.10	100.	1.03	6.00	54	0.00	0.00	0.00	124.
1.01	18.00	.49	.08	.10	164.	1.03	7.00	55	0.00	0.00	0.00	116.
1.01	19.00	.81	.00	.01	98.	1.03	8.00	56	0.00	0.00	0.00	108.
1.01	20.00	.81	.00	.01	52.	1.03	9.00	57	0.00	0.00	0.00	101.
1.01	21.00	.81	.00	.01	24.	1.03	10.00	58	0.00	0.00	0.00	94.
1.01	22.00	.81	.00	.01	12.	1.03	11.00	59	0.00	0.00	0.00	88.
1.01	23.00	.81	.00	.01	9.	1.03	12.00	60	0.00	0.00	0.00	82.
1.02	0.00	.81	.00	.01	8.	1.03	13.00	61	0.00	0.00	0.00	77.
1.02	1.00	.10	.00	.10	6.	1.03	14.00	62	0.00	0.00	0.00	71.
1.02	2.00	.10	.00	.10	7.	1.03	15.00	63	0.00	0.00	0.00	67.
1.02	3.00	.10	.00	.10	7.	1.03	16.00	64	0.00	0.00	0.00	62.
1.02	4.00	.10	.00	.10	6.	1.03	17.00	65	0.00	0.00	0.00	58.
1.02	5.00	.10	.00	.10	6.	1.03	18.00	66	0.00	0.00	0.00	54.
1.02	6.00	.10	.00	.10	5.	1.03	19.00	67	0.00	0.00	0.00	51.
1.02	7.00	.10	.00	.10	47.	1.03	20.00	68	0.00	0.00	0.00	47.
1.02	8.00	.10	.00	.10	156.	1.03	21.00	69	0.00	0.00	0.00	44.
1.02	9.00	.10	.00	.10	237.	1.03	22.00	70	0.00	0.00	0.00	41.
1.02	10.00	.10	.00	.10	278.	1.03	23.00	71	0.00	0.00	0.00	38.
1.02	11.00	.10	.00	.10	306.	1.04	0.00	72	0.00	0.00	0.00	36.
1.02	12.00	.10	.00	.10	526.	1.04	1.00	73	0.00	0.00	0.00	33.
1.02	13.00	.10	.00	.10		1.04	2.00	74	0.00	0.00	0.00	31.
1.02	14.00	.10	.00	.10		1.04	3.00	75	0.00	0.00	0.00	29.

SUM 24.42 21.16 3.27 24108.
(620.11 537.11 83.11 603.00)

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
4047.	2740.	920.	335.	24135.
115.	78.	26.	9.	683.
	15.88	21.27	23.24	23.24
	403.27	540.19	590.20	590.32
	1363.	1825.	1994.	1995.
	1681.	2251.	2460.	2460.

CFS
CMS
INCHES
MM
AC-FT
THOUS CU M

[illegible]

9.00 57.
 10.00 58.
 11.00 59.
 12.00 60.
 13.00 61.
 14.00 62.
 15.00 63.
 16.00 64.
 17.00 65.
 18.00 66.
 19.00 67.
 20.00 68.
 21.00 69.
 22.00 70.
 23.00 71.
 0.00 72.
 1.00 73.
 2.00 74.
 3.00 75.

•OVN•

HYDROGRAPH AT STA 1 FOR PLAN 1. RTIO 1									
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	3.	9.	21.	54.	91.	82.	49.	26.	1.
12.	6.	4.	4.	4.	3.	3.	3.	3.	26.
23.	75.	119.	139.	148.	153.	263.	875.	1446.	3.
2024.	1395.	763.	378.	186.	101.	94.	88.	82.	82.
77.	67.	62.	58.	54.	51.	47.	44.	41.	41.
36.	33.	31.	29.	27.	25.	24.	22.	21.	21.
19.	17.	16.	15.	14.	13.	12.	11.	10.	9.
PEAK									
2024.									
CFS									
1374.									
CMS									
57.									
INCHES									
7.94									
MM									
201.63									
AC-FT									
861.									
THOUS CU M									
1126.									
TOTAL VOLUME									
12067.									
342.									
11.62									
295.16									
997.									
1230.									

HYDROGRAPH AT STA 1 FOR PLAN 1. RTIO 2									
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	3.	9.	21.	54.	91.	82.	49.	26.	1.
12.	6.	4.	4.	4.	3.	3.	3.	3.	26.
23.	75.	119.	139.	148.	153.	263.	875.	1446.	3.
2024.	1395.	763.	378.	186.	101.	94.	88.	82.	82.
77.	67.	62.	58.	54.	51.	47.	44.	41.	41.
36.	33.	31.	29.	27.	25.	24.	22.	21.	21.
19.	17.	16.	15.	14.	13.	12.	11.	10.	9.
PEAK									
2024.									
CFS									
1374.									
CMS									
57.									
INCHES									
7.94									
MM									
201.63									
AC-FT									
861.									
THOUS CU M									
1126.									
TOTAL VOLUME									
12067.									
342.									
11.62									
295.16									
997.									
1230.									

.....

HYDROGRAPH ROUTING

ROUTING INPLOW HYDROGRAPH THRU POND - OVERTOPPING ANALYSIS

ISTAB	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
1	1	0	0	0	0	1	0	0
ROUTING DATA								
QLOSS	CLOSS	AVG	IRIS	ISAME	IOPT	IPMP	LSTR	
0.0	0.00	0.00	1	1	0	0	0	
MSIPS								
1	0	0	0.00	0.00	0.00	0.00	0	
LAG								
1	0	0	0.00	0.00	0.00	0.00	0	
X								
1	0	0	0.00	0.00	0.00	0.00	0	
STORA								
1	0	0	0.00	0.00	0.00	0.00	0	
CAPACITY=								
0.	0.	26.	87.	159.	382.	660.	989.	1380.
ELEVATION=								
431.	435.	436.	438.	440.	445.	450.	455.	460.

[illegible][illegible]

0.	0.	0.	0.
0.	0.	0.	0.
0.	0.	0.	0.
0.	95.	86.	101.
424.	780.	703.	817.
820.	807.	812.	805.
760.	751.	750.	740.
995.	671.	670.	663.

STORAGE

[illegible]

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	131.	126.	119.	71.	5899.
CMS	4.	4.	3.	2.	144.
INCHES		.72	2.75	4.91	6.91
MM		18.19	69.93	124.70	124.73
AC-FY		61.	236.	421.	421.
THOUS. CU YD		76.	291.	520.	520.

D-10

11.00	59.1	0
12.00	60.1	0
13.00	61.1	0
14.00	62.1	0
15.00	63.1	0
16.00	64.1	0
17.00	65.1	0
18.00	66.1	0
19.00	67.1	0
20.00	68.1	0
21.00	69.1	0
22.00	70.1	0
23.00	71.1	0
24.00	72.1	0
25.00	73.1	0
26.00	74.1	0
27.00	75.1	0

•OVIN•

ITERATIVE SOLUTION DID NOT CONVERGE. PERIOD
ESTIMATED W.S. ELEV 4.396E+02 0.318E+02
ITERATIVE SOLUTION DID NOT CONVERGE. PERIOD
ESTIMATED W.S. ELEV 4.319E+02 0.319E+02
ITERATIVE SOLUTION DID NOT CONVERGE. PERIOD
ESTIMATED W.S. ELEV 4.321E+02 0.317E+02
ITERATIVE SOLUTION DID NOT CONVERGE. PERIOD
ESTIMATED W.S. ELEV 4.306E+02 0.317E+02
ITERATIVE SOLUTION DID NOT CONVERGE. PERIOD
ESTIMATED W.S. ELEV 4.308E+02 0.334E+02

STATION 1. PLAN 1. RATIO 2

2 SUB-STEP 1 TIME 2.00 HR
CONTINUITY BALANCE 3.607E+03 -4.759E+00
5 SUB-STEP 1 TIME 5.00 HR
CONTINUITY BALANCE -7.595E-01 -1.577E-01
6 SUB-STEP 1 TIME 6.00 HR
CONTINUITY BALANCE 1.245E+01 -1.963E-01
9 SUB-STEP 1 TIME 9.00 HR
CONTINUITY BALANCE 1.151E+03 -2.989E+00
31 SUB-STEP 1 TIME 31.00 HR
CONTINUITY BALANCE -4.563E+00 -4.478E+00

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW
0. 0. 4. 0. 4. 0. 0. 3.
54. 39. 31. 47. 50. 52. 54.
46. 51. 59. 63. 67. 76. 86.
114. 1843. 2275. 1537. 982. 553. 291.
212. 191. 141. 133. 127. 122.
119. 119. 116. 116. 116. 117.
117.

STORAGE
0. 0. 0. 0. 0. 0. 0.
20. 25. 16. 33. 52. 72. 162.
735. 992. 1086. 936. 936. 900. 865.
851. 847. 844. 835. 832. 829. 827.
820. 817. 812. 808. 803. 798. 792.
760. 762. 755. 748. 741. 735. 775.

STAGE
431.0 431.0 431.5 431.7 431.9 431.3 431.9
431.7 431.9 432.4 432.4 432.4 432.4 432.4
436.0 435.9 435.7 435.5 435.4 435.3 435.1
434.0 435.2 435.0 436.9 437.5 438.4 440.1
431.1 435.0 436.2 436.8 437.2 437.6 438.1
432.9 432.8 432.8 432.7 432.7 432.6 432.5
432.4 432.4 432.3 432.2 432.2 432.1 431.9
431.6 431.5 431.4 431.3 431.2 431.0 431.7
431.9 431.9 431.9 431.9 431.9 431.9 431.9
436.1 436.1 436.1 436.1 436.1 436.1 436.1
446.4 446.4 446.4 446.4 446.4 446.4 446.4
453.0 453.0 453.0 453.0 453.0 453.0 453.0
452.5 452.5 452.5 452.5 452.5 452.5 452.5
451.7 451.7 451.7 451.7 451.7 451.7 451.7

PEAK OUTFLOW IS 2666. AT TIME 43.00 HOURS

PEAK
2666.
75.
CFS
CMS
INCHES
MM
AC-FT
THOUS CU M

6-HOUR
1543.
44.
0.91
226.41
765.
944.

24-HOUR
521.
15.
12.05
306.02
1036.
1275.

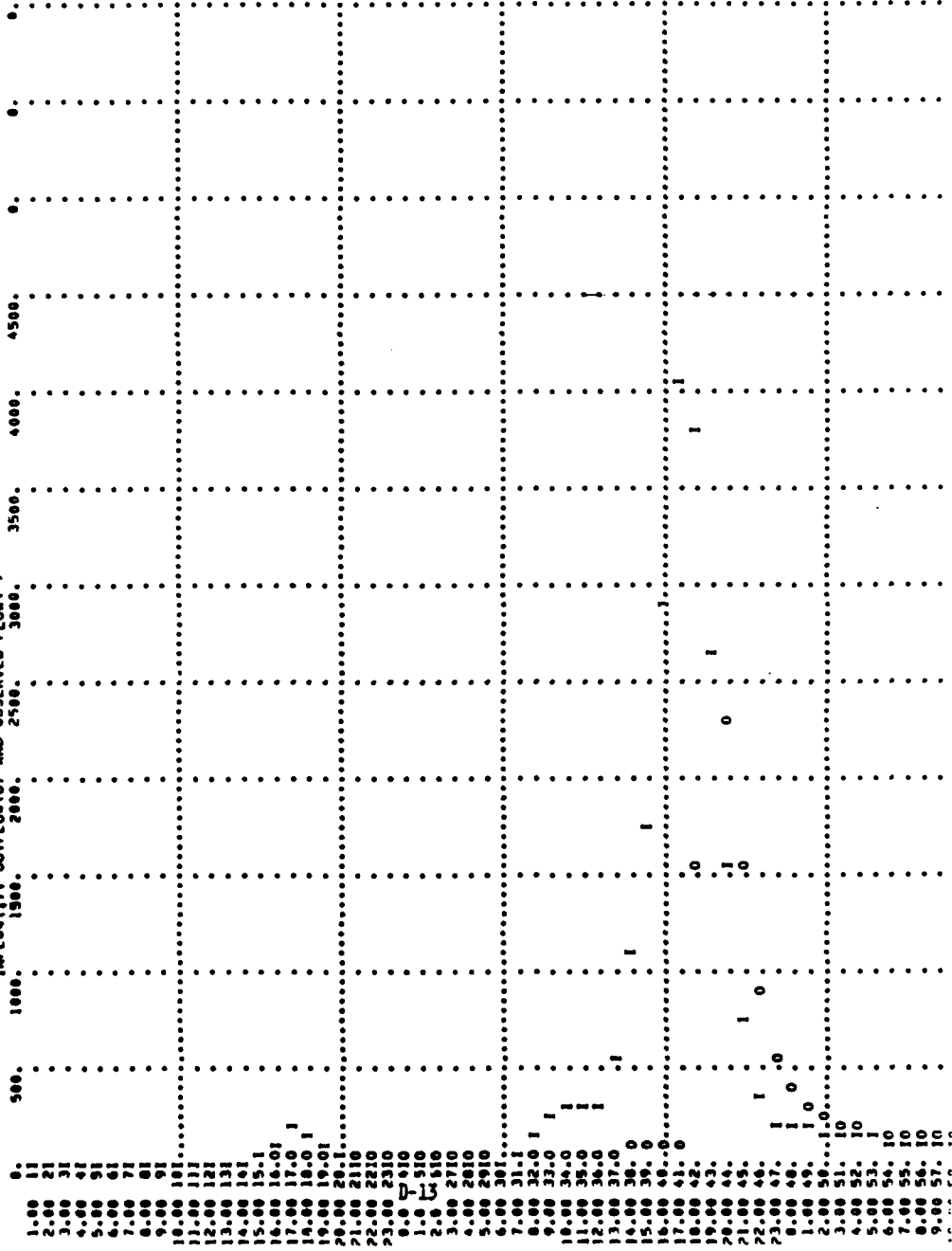
72-HOUR
211.
6.
14.62
371.38
1255.
1548.

TOTAL VOLUME
15186.
430.
14.62
371.43
1255.
1548.

•AND•

STATION 1

INFLOW (I), OUTFLOW (O) AND OBSERVED FLOW (O)



13.00	61.10	.....	.....
14.00	62.10	.....	.....
15.00	63.10	.....	.....
16.00	64.10	.....	.....
17.00	65.10	.....	.....
18.00	66.10	.....	.....
19.00	67.10	.....	.....
20.00	68.10	.....	.....
21.00	69.10	.....	.....
22.00	70.10	.....	.....
23.00	71.10	.....	.....
24.00	72.10	.....	.....
25.00	73.10	.....	.....
26.00	74.10	.....	.....
27.00	75.10	.....	.....

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
 FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
 AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS	
				RATIO 1	RATIO 2
				.50	1.00
HYDROGRAPH AT	1	1.61	1	2024.	4047.
	(	4.17)	(	57.30)	114.61)
ROUTED TO	1	1.61	1	131.	2644.
	(	4.17)	(	3.70)	75.50)

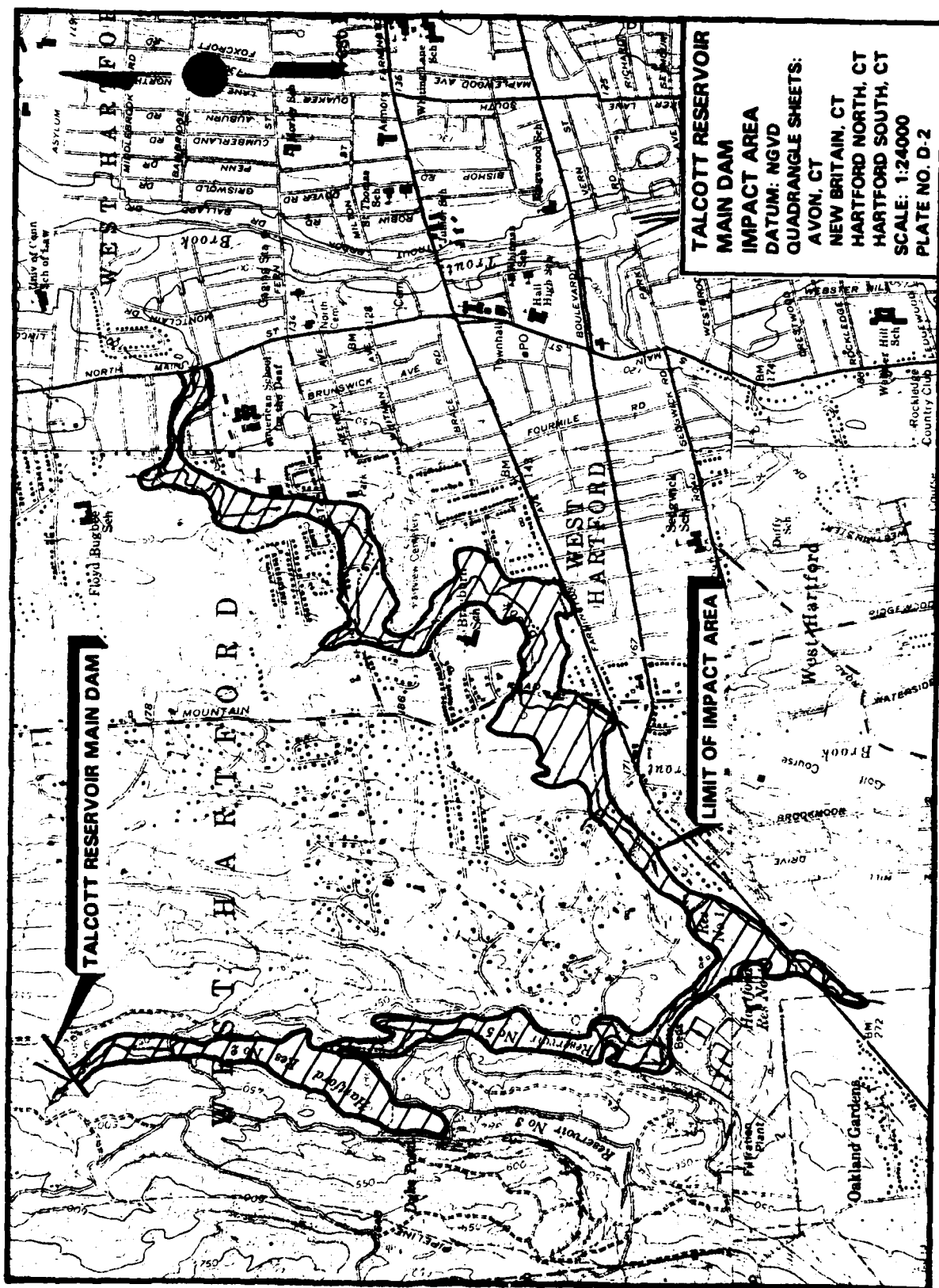
SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1	ELEVATION STORAGE OUTFLOW	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM					
		415.00	452.50	450.00					
		0.	824.	1224.					
		47.	120.	4442.					
RATIO OF PMF	MAXIMUM RESERVOIR W.S.-ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS		
.50	452.60	0.00	831.	131.	0.00	47.00	0.00		
1.00	456.24	0.00	1006.	2666.	0.00	43.00	0.00		

TALCOTT RESERVOIR

MAIN DAM

D-17



Talcott Reservoir - Main Dam

Dam Failure Analysis

1. Failure discharge with pool at Em. Spillway (elev. 452.5) = 28000 CFS
2. Depth of water in reservoir at time of failure = 24.5 ft.
3. Maximum depth of flow downstream of dam = 24± ft.
4. Water surface elevation just downstream)
of dam at time of failure) = 452±

The failure discharge of 28000 CFS will enter and flow downstream 29000 feet until the brook crosses North Main Street. Valley storage in this 29000 feet length of brook is significant in reducing the discharge. Also due to roughness characteristics, obstructions and frictional losses, it is very likely that the unsteady dam failure flow will dissipate its wave and kinetic energy and thus convert to steady and uniform flow obeying Manning's formulae 29000 feet downstream. The failure profile will have the following hydraulic characteristics:

DISTANCE FROM THE DAM	WATER SURFACE ELEVATION	DEPTH (ft.)	REMARKS
0	452.5	24.5	At Dam
1600	397.8	7.8	
7500	323.8	3.8	Hartford Res. No. 5
11800	260.7	2.7	Hartford Res. No. 1
19000	142.2	2.2	
25000	131.7	1.7	
29000	102.±	2±	North Main Street

NOTES:

"Rule of Thumb" Guidance for Estimating
Downstream Dam Failure Analysis

DATA

Name of Dam Talcott Reservoir - Main Dam
Location West Hartford, Connecticut
Drainage Area 1.6 sq. mi., Top of Dam 458.0
Spillway Type Grassed Channel, Crest of Spillway 452.5
Surface Area @ Crest Elev. 65.7 Acres = 0.10 sq. mi.
Pool Bottom Near Dam = 428.0
Assumed Side Slopes of Embankments = 2H:1V
Depth of Pool at Dam (Y_o) = 24.5 Feet
Mid-Height Elev. 440.2
Length of Dam at Crest = 1325 Feet
Length of Dam at Mid-Height = 350 Feet
40 % of Dam Length at Mid-Height = W_b = 140 Feet

Step 1

Storage (S) at time of failure 826 Ac-FT

Step 2

$$\begin{aligned} &\text{Peak Failure Discharge} \\ &Q_{pl} = 8/27 W_b \sqrt{g} Y_o^{3/2} \\ &= (1.68) (W_b) (Y_o)^{3/2} = \underline{28000} \text{ cfs} \end{aligned}$$

Failure is assumed to coincide with pool elevation at Emergency Spillway Crest

NOTES:

BY JR DATE 12/4/86
 CHKD. BY ERJ DATE 2/10/87

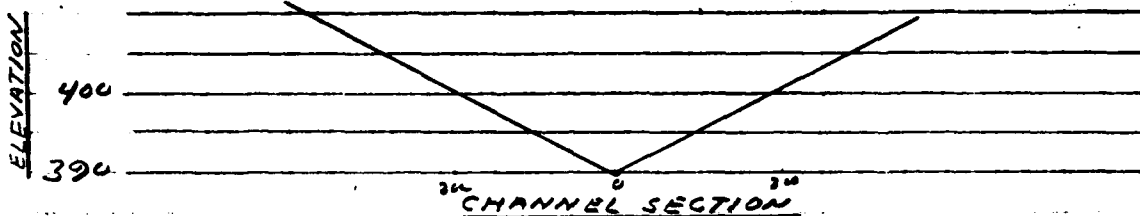
SUBJECT DAM INSPECTION STUDY
DAM FAILURE ANALYSIS

SHEET NO. 80-100/0E OF 0E
 JOB NO. 80-100/0E
 PURCELL ASSOCIATES
 ENGINEERS - ARCHITECTS - PLANNERS

DAM TALCOTT RESERVOIR - MAIN DAM

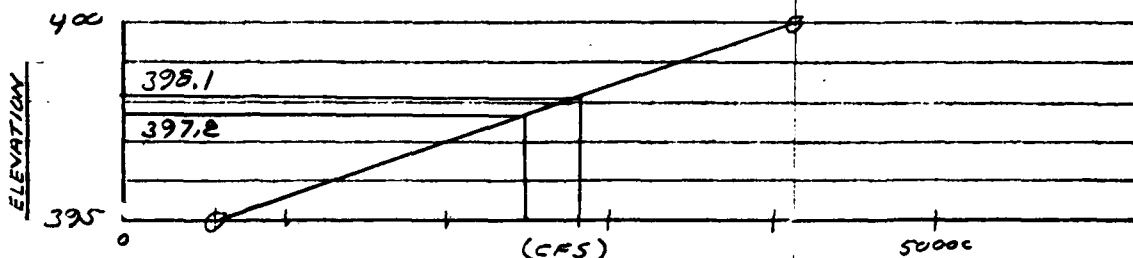
SECTION 1600' DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$ $n = .03$ SLOPE (S_L) = .02 $'/'$



$Q_P = 28000$ CFS FULL SPILLWAY $Q_S = 75$ CFS
 TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
400	2000	400	5	41000	10
395	500	200	2.5	6000	5



$$V_1 = \left(\frac{24.5 + 8.1}{2} \right) \left(\frac{140}{1} + \frac{35000}{2} \right) \left(\frac{1600}{43560} \right) \left(\frac{1}{2} \right) = 94 \text{ AC-FT}$$

$$Q_{P2} = Q_P (1 - V_1/S) = 25000 \text{ CFS} \quad V_{AVG} = 93$$

$$V_2 = \left(\frac{24.5 + 7.8}{2} \right) (5.7) = 92 \text{ AC-FT}$$

$$Q_{P2} = Q_P (1 - V_{AVG}/S) = 25000 \text{ CFS} \quad \text{ELEV} = 397.8$$

$$\text{DEPTH} = 7.8$$

FULL SPILLWAY: DEPTH = 1 ±

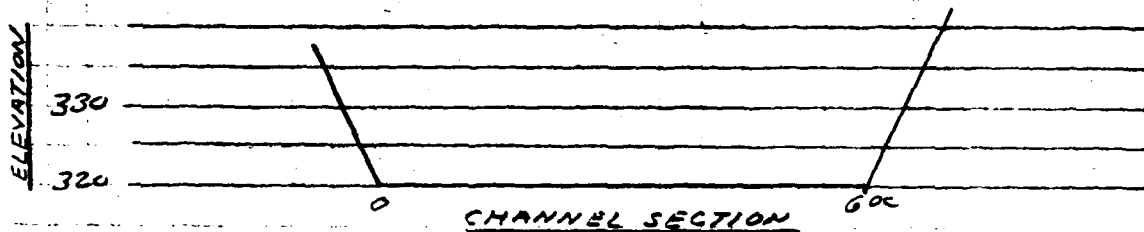
INCREASE DUE TO DAM FAILURE = 6.8

BY JL DATE 12/1/88 SUBJECT DAM INSPECTION STUDY SHEET NO. 80-100/08 OF 08
 CHKD. BY ERT DATE 2/10/89 DAM FAILURE ANALYSIS JOB NO. 80-100/08
 PURCELL ASSOCIATES
 ENGINEERS • ARCHITECTS • PLANNERS

DAM TALCOTT RESERVOIR - MAIN DAM

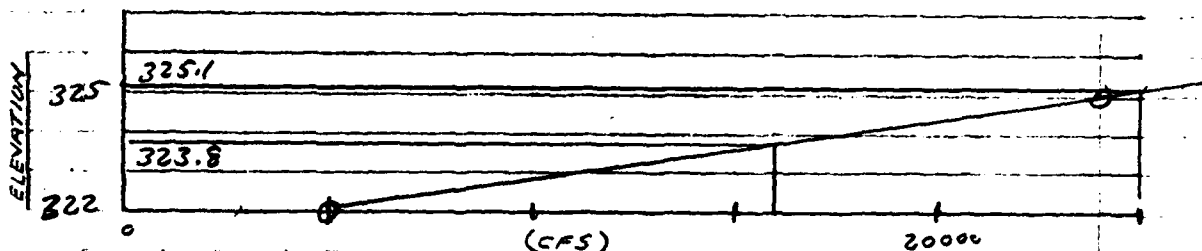
SECTION 7500' DOWNSTREAM - HARTFORD RES NO 5

USING $Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$ $n = .03$ SLOPE (S_L) = .003 $1/1$



$Q_P = 25000$ CFS FULL SPILLWAY $Q_S = 75$ CFS
 TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
322	1200	600	2	5000	2
325	3125	650	4.8	24000	5



$$V_1 = \left(\frac{7.8 + 5.1}{2} \right) \left(\frac{14000}{2} + \frac{65000}{2} \right) \left(\frac{5900}{43560} \right) \left(\frac{1}{2} \right) = 303 \text{ AC-FT}$$

$$Q_{P_2} = Q_P (1 - V_1/S) = 16000 \text{ CFS} \quad V_{AVG} = 288$$

$$V_2 = \left(\frac{7.8 + 3.8}{2} \right) (47) = 272 \text{ AC-FT}$$

$$Q_{P_2} = Q_P (1 - V_{AVG}/S) = 16000 \text{ CFS} \quad \text{ELEV} = 323.8$$

$$\text{DEPTH} = 3.8$$

FULL SPILLWAY DEPTH = 0

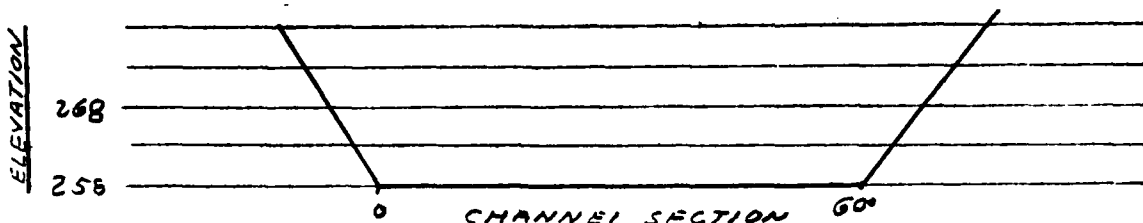
INCREASE DUE TO DAM FAILURE = 3.8

BY JR DATE 12/1/88 SUBJECT DAM INSPECTION STUDY SHEET NO. OF
 CHKD. BY ERT DATE 2/10/89 DAM FAILURE ANALYSIS JOB NO. 80-100/06
 PURCELL ASSOCIATES
 ENG. NEERS - ARCHITECTS - PLANNERS

DAM TALCOTT RESERVOIR - MAIN DAM

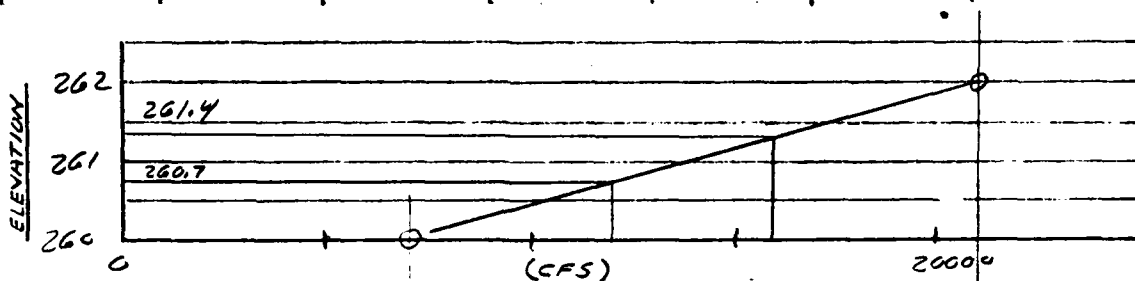
SECTION 11800' DOWNSTREAM - HARTFORD RBS NO. 1

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n = .03$ SLOPE (S_L) = .005 $1/1$



$Q_P = 16000$ CFS FULL SPILLWAY $Q_S = 75$ CFS
 TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
260	1200	600	2	7000	2
262	2500	650	3.8	21000	4



$$V_1 = \left(\frac{3.6 + 3.4}{2} \right) \left(\frac{650 \times 600}{2} + \frac{650 \times 600}{2} \right) \left(\frac{4300}{43560} \right) \left(\frac{1}{2} \right) = 222 \text{ AC-FT}$$

$$Q_{P2} = Q_P (1 - V_1/S) = 12000 \text{ CFS} \quad V_{AVG} = 212$$

$$V_2 = \left(\frac{3.8 + 2.7}{2} \right) (62) = 24 \text{ AC-FT}$$

$$Q_{P2} = Q_P (1 - V_{AVG}/S) = 12000 \text{ CFS} \quad \text{ELEV} = 260.7$$

$$\text{DEPTH} = 2.7$$

FULL SPILLWAY: DEPTH = 0

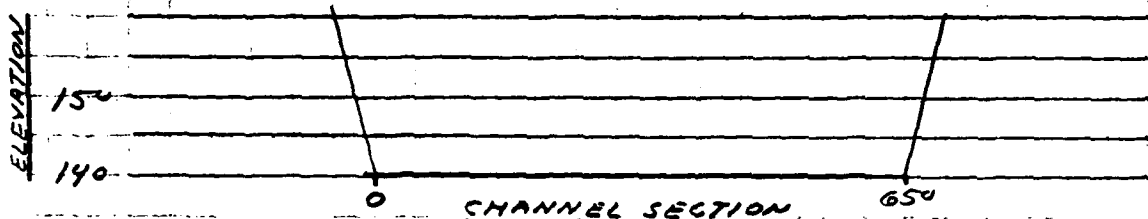
INCREASE DUE TO DAM FAILURE = 2.7

BY JR DATE 12/4/88 SUBJECT DAM INSPECTION STUDY SHEET NO. OF
 CHKD. BY ERT DATE 2/10/89 DAM FAILURE ANALYSIS JOB NO. 80-100/0E
 PURCELL ASSOCIATES
 ENGINEERS - ARCHITECTS - PLANNERS

DAM TALCOTT RESERVOIR → MAIN DAM

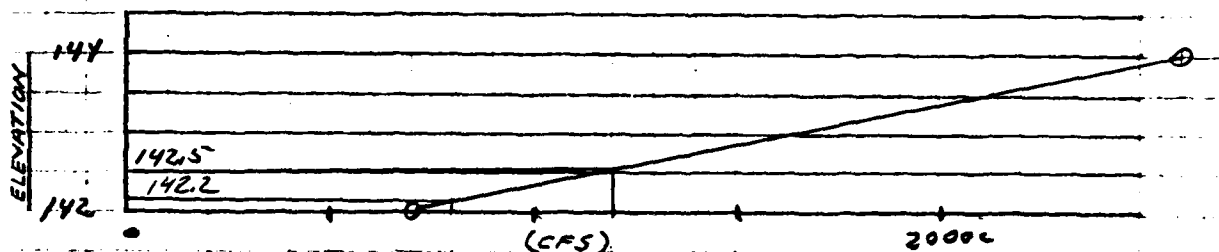
SECTION 19000' DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n = .03$ SLOPE (S_L) = $.005$ $1/1$



$Q_p = 12000$ CFS FULL SPILLWAY $Q_s = 75$ CFS
 TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
142	1300	650	2	7000	2
144	2600	650	4	23000	4



$$V_1 = \left(\frac{2.7 + 2.5}{2} \right) \left(\frac{650 \times 600}{2} + \frac{650}{1} \right) \left(\frac{7200}{43560} \right) \left(\frac{1}{6} \right) = 274 \text{ AC-FT}$$

$$Q_{P_2} = Q_p (1 - V_1/S) = 8000 \text{ CFS} \quad V_{AVE} = 266$$

$$V_2 = \left(\frac{2.7 + 2.2}{2} \right) (105) = 257 \text{ AC-FT}$$

$$Q_{P_2} = Q_{P_1} (1 - V_{AVE}/S) = 8000 \text{ CFS} \quad \text{ELEV} = 142.2$$

$$\text{DEPTH} = 2.2$$

FULL SPILLWAY DEPTH =

INCREASE DUE TO DAM FAILURE = 2.2

BY JR DATE 12/1/80
 CHKD. BY ERT DATE 2/19/81

SUBJECT DAM INSPECTION STUDY

SHEET NO. OF

DAM FAILURE ANALYSIS

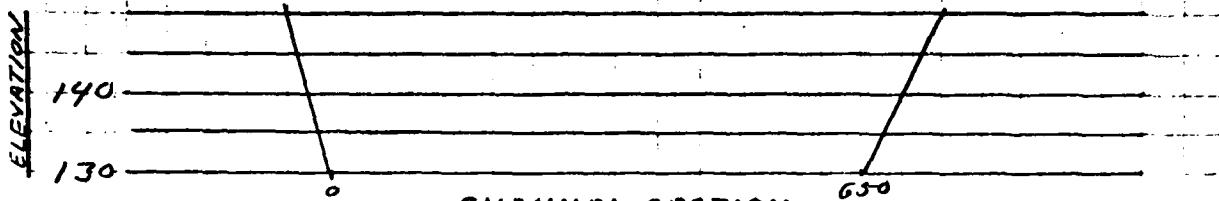
JOB NO. 80-100/06

PURCELL ASSOCIATES
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DAM TALCOTT RESERVOIR - MAIN DAM

SECTION 25000' DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n = 103$ SLOPE (S_L) = .004 $1/1$



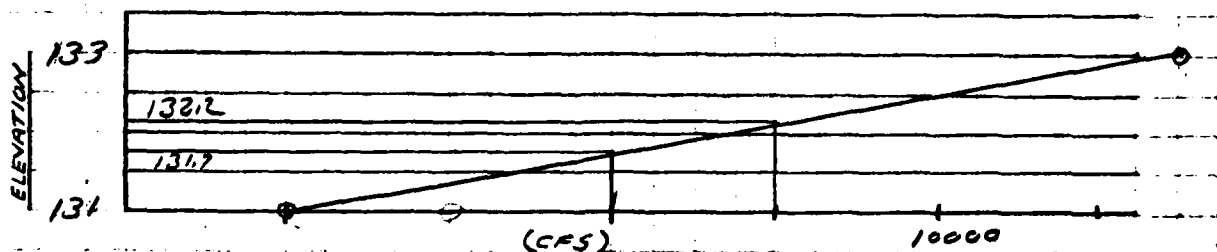
$Q_p = 8000$ CFS

CFS

FULL SPILLWAY $Q_s = 75$ CFS

TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
131	650	650	1	2000	1
133	1950	650	3	13000	3



$$V_1 = \left(\frac{2.2 + 2.2}{2} \right) \left(\frac{650}{1} + \frac{650}{1} \right) \left(\frac{6000}{43560} \right) \left(\frac{1}{2} \right) = 197 \text{ AC-FT}$$

$$Q_{P2} = Q_p (1 - V_1/S) = 6000 \text{ CFS} \quad V_{AVE} = 185$$

$$V_2 = \left(\frac{2.2 + 1.7}{2} \right) (89) = 174 \text{ AC-FT}$$

$$Q_{P2} = Q_p (1 - V_{AVE}/S) = 6000 \text{ CFS} \quad \text{ELEV} = 131.7$$

$$\text{DEPTH} = 1.7$$

FULL SPILLWAY DEPTH = —

INCREASE DUE TO DAM FAILURE = 1.7

Talcott Reservoir - Main Dam

A. Size Classification

Height of dam = 30.0 ft.; hence Small

Storage capacity at top of dam (elev. 458.0) = 1205 AC-FT.; hence intermediate

Adopted size classification: intermediate

B.i) Hazard Potential

The potential exists for the loss of more than a few lives
and excessive economic damage at numerous homes and buildings
in West Hartford.

Adopted hazard classification: High

ii) Impact of Failure of Dam with pool at Em. Spillway Crest

It is estimated from the "rule of thumb" failure hydrograph, that the following adverse impacts are a possibility by the failure of this dam.

- a) Loss of homes 20+;
- b) Loss of buildings 10+;
- c) Loss of highways or roads 8;
- d) Loss of bridges 6;

The failure profile can affect a distance of 29000 feet from the dam.

C. Hazard Potential Classifications

<u>HAZARD</u>	<u>SIZE</u>	<u>TEST FLOOD RANGE</u>
<u>High</u>	<u>Intermediate</u>	<u>PMF</u>
Adopted Test Flood = <u>PMF</u>		= <u>2510</u> CSM
		= <u>4047</u> CFS

D. Overtopping Potential

Drainage Area 1030 acres = 1.61 sq. miles

Spillway crest elevation = 452.5

Top of Dam Elevation = 458.0

Maximum spillway discharge

Capacity without overtopping of dam = 5400 (Total Project) CFS

"test flood" inflow discharge = 4047 CFS

"test flood" outflow discharge = 2666 CFS

TALCOTT RESERVOIR

DIVERSION DIKE

Talcott Reservoir - Diversion Dike

Dam Failure Analysis

1. Failure discharge with pool at Em. Spillway(elev. 452.5) = 57000 CFS
2. Depth of water in reservoir at time of failure = 24.5 ft.
3. Maximum depth of flow downstream of dam = 24± ft.
4. Water surface elevation just downstream)
of dam at time of failure) = 452±

The failure discharge of 57000 CFS will enter and flow downstream 20000 feet until the brook crosses North Main Street. Valley storage in this 20000 feet length of brook is significant in reducing the discharge. Also due to roughness characteristics, obstructions and frictional losses, it is very likely that the unsteady dam failure flow will dissipate its wave and kinetic energy and thus convert to steady and uniform flow obeying Manning's formulae 20000 feet downstream. The failure profile will have the following hydraulic characteristics:

DISTANCE FROM THE DAM	WATER SURFACE ELEVATION	DEPTH (ft.)	REMARKS
0	452.5	24.5	At Dam
300	441.4	11.4	
5700	230.9	10.9	
9000	164.0	4.0	
11000	160.0	4.0	
15500	143.0	3.0	
20000	103.±	3±	North Main Street

NOTES:

"Rule of Thumb" Guidance for Estimating
Downstream Dam Failure Analysis

DATA

Name of Dam Talcott Reservoir - Diversion Dike
Location West Hartford, Connecticut
Drainage Area 1.6 sq. mi., Top of Dam 458.0
Spillway Type Grassed Channel, Crest of Spillway 452.5
Surface Area @ Crest Elev. 65.7 Acres = 0.10 sq. mi.
Pool Bottom Near Dam = 428
Assumed Side Slopes of Embankments = 2H:1V
Depth of Pool at Dam (Y_o) = 24.5 Feet
Mid-Height Elev. 440.2
Length of Dam at Crest = 2860 Feet
Length of Dam at Mid-Height = 700 Feet (Portion over outlet)
40 % of Dam Length at Mid-Height = W_b = 280 Feet

Step 1

Storage (S) at time of failure 826 Ac-FT

Step 2

$$\begin{aligned} &\text{Peak Failure Discharge} \\ Q_{p1} &= 8/27 W_b \sqrt{g} Y_o^{3/2} \\ &= (1.68) (W_b) (Y_o)^{3/2} = \underline{57000} \text{ cfs} \end{aligned}$$

Failure is assumed to coincide with pool elevation at Emergency Spillway
Crest

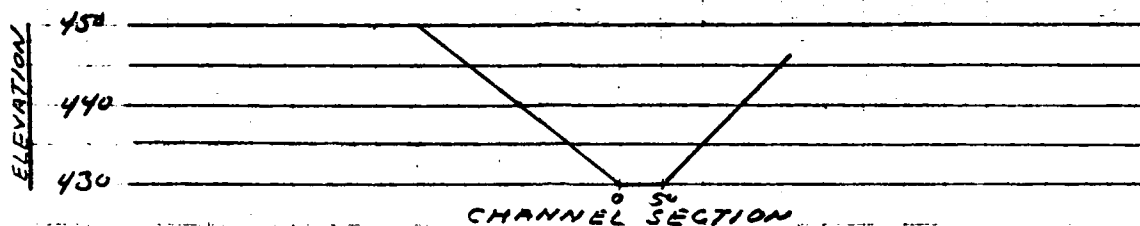
NOTES:

BY JR DATE 12/1/88 SUBJECT DAM INSPECTION STUDY SHEET NO. 80-100/07 OF 07
 CHKD. BY ERT DATE 2/19/89 DAM FAILURE ANALYSIS JOB NO. 80-100/07
 PURCELL ASSOCIATES
 ENGINEERS - ARCHITECTS - PLANNERS

DAM TALCOTT RESERVOIR - DIVERSION DIKE

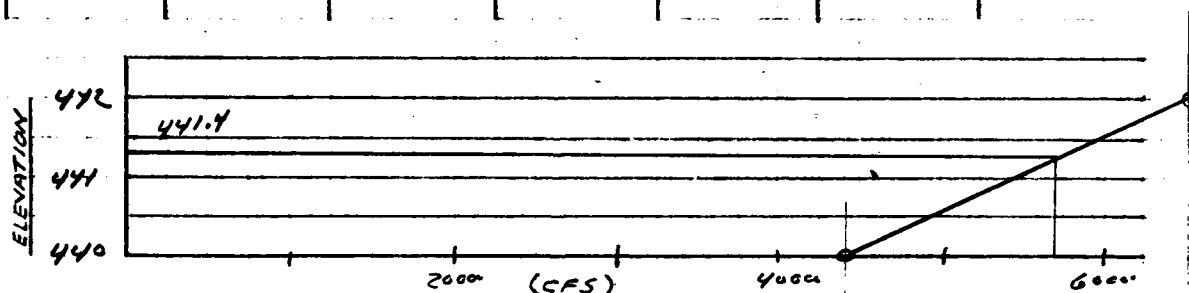
SECTION 300 FEET DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n = .03$ SLOPE (S_L) = .029 $1/1$



$Q_P = 57000$ CFS FULL SPILLWAY $Q_s = 45$ CFS
 TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
440	1600	270	5.9	44000	10
443	2405	320	7.5	78000	13
442	2100	300	7	65000	12



$$V_1 = \left(\frac{24.5 + 11.4}{2} \right) \left(\frac{280}{1} + \frac{300 + 50}{2} \right) \left(\frac{300}{43560} \right) \left(\frac{1}{t} \right) = 28 \text{ AC-FT}$$

$$Q_{P2} = Q_P (1 - V_1/S) = 55000 \text{ CFS} \quad V_{AVG} = \text{---}$$

$$V_2 = \left(\frac{\text{---} + \text{---}}{2} \right) (1.6) = \text{---} \text{ AC-FT}$$

$$Q_{P2} = Q_P (1 - V_{AVG}/S) = 55000 \text{ CFS} \quad \text{ELEV} = 441.4$$

$$\text{DEPTH} = 11.4$$

FULL SPILLWAY DEPTH = 0

INCREASE DUE TO DAM FAILURE = 11.4

BY JL DATE 12/1/86
 CHKD. BY ERT DATE 2/10/87

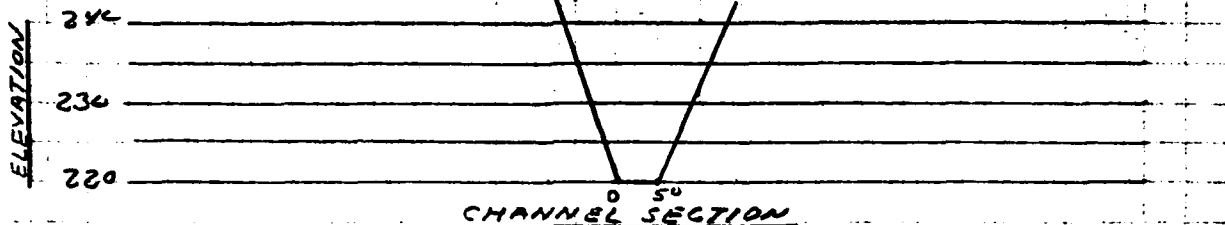
SUBJECT DAM INSPECTION STUDY
DAM FAILURE ANALYSIS

SHEET NO. OF
 JOB NO. 80-100/07
 PURCELL ASSOCIATES
 ENGINEERS • ARCHITECTS • PLANNERS

DAM TALCOTT RESERVOIR - DIVERSION DIKE

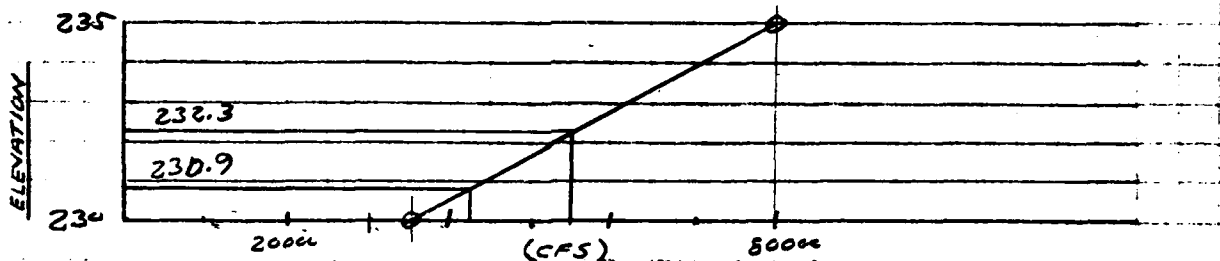
SECTION 5700' DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$ $n = .03$ SLOPE (S_L) = .05 $\frac{1}{1}$



$Q_P =$ 55000 CFS FULL SPILLWAY $Q_S =$ 45 CFS
 TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
230	850	120	7.1	35000	10
235	1575	160	9.8	80000	15



$$V_1 = \left(\frac{11.4 + 12.3}{2} \right) \left(\frac{300+50}{2} + \frac{140+50}{2} \right) \left(\frac{5400}{43560} \right) \left(\frac{1}{2} \right) = \underline{198} \text{ AC-FT}$$

$$Q_{P2} = Q_P (1 - V_1/S) = \underline{42000} \text{ CFS} \quad V_{AVG} = \underline{192}$$

$$V_2 = \left(\frac{11.4 + 10.9}{2} \right) (16.7) = \underline{186} \text{ AC-FT}$$

$$Q_{P2} = Q_P (1 - V_{AVG}/S) = \underline{42000} \text{ CFS} \quad \text{ELEV} = \underline{230.9}$$

$$\text{DEPTH} = \underline{10.9}$$

FULL SPILLWAY? DEPTH = 0

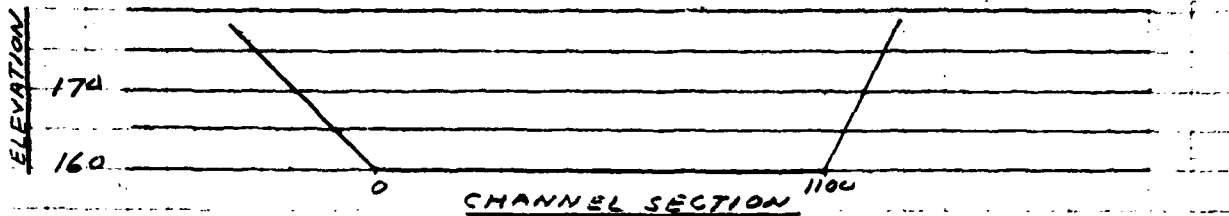
INCREASE DUE TO DAM FAILURE = 10.9

BY JR DATE 12/1/88 SUBJECT DAM INSPECTION STUDY SHEET NO. 80-100/67 OF 1
 CHKD. BY ERT DATE 2/19/89 DAM FAILURE ANALYSIS JOB NO. 80-100/67
 PURCELL ASSOCIATES
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DAM TALCOTT RESERVOIR - DIVERSION DIKE

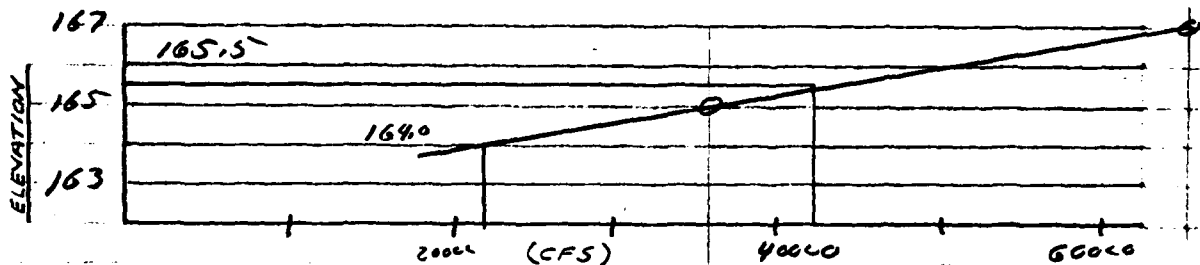
SECTION 9000' DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n = \underline{.03}$ SLOPE (S_L) = .002 $1/1$



$Q_p = \underline{42000}$ CFS FULL SPILLWAY $Q_s = \underline{45}$ CFS
 TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
165	5875	1250	4.7	36000	5
167	8400	1300	6.5	65000	7



$$V_1 = \left(\frac{10.9 + 5.5}{2} \right) \left(\frac{140 + 50}{2} + \frac{1250 + 1100}{2} \right) \left(\frac{3300}{43560} \right) \left(\frac{1}{2} \right) = \underline{394} \text{ AC-FT}$$

$$Q_{P2} = Q_p (1 - V_1/S) = \underline{22000} \text{ CFS} \quad V_{AVE} = \underline{379}$$

$$V_2 = \left(\frac{14.9 + 4.0}{2} \right) (48) = \underline{365} \text{ AC-FT}$$

$$Q_{P2} = Q_p (1 - V_{AVE}/S) = \underline{23000} \text{ CFS} \quad \text{ELEV} = \underline{164.0}$$

$$\text{DEPTH} = \underline{4.0}$$

FULL SPILLWAY DEPTH = 0

INCREASE DUE TO DAM FAILURE = 4.0

BY JR DATE 12/1/88
 CHKD. BY ERT DATE 2/14/89

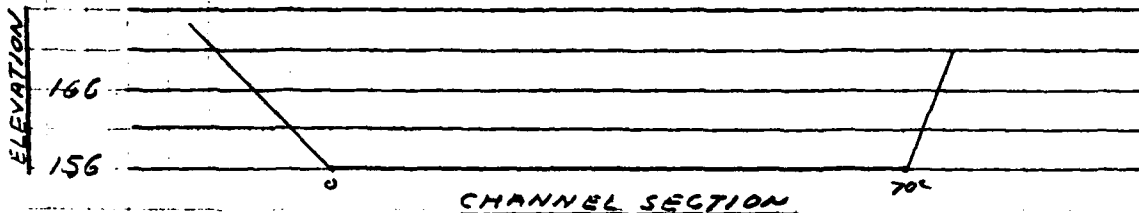
SUBJECT DAM INSPECTION STUDY
DAM FAILURE ANALYSIS

SHEET NO. OF
 JOB NO. 80-100/07
 PURCELL ASSOCIATES
 ENGINEERS - ARCHITECTS - PLANNERS

DAM TALCOTT RESERVOIR - DIVERSION DIKE

SECTION 11000' DOWNSTREAM

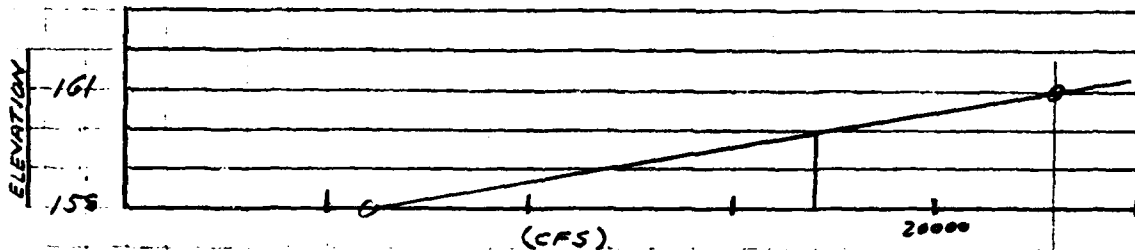
USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n = .03$ SLOPE (S_L) = .002 $1/1$



CHANNEL SECTION

$Q_p = 23000$ CFS FULL SPILLWAY $Q_s = 45$ CFS
 TOTAL STORAGE (S) = 526 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
156	144	700	2	6000	2
161	3750	800	4.7	23000	5



$$V_1 = \left(\frac{4.0 + 5.0}{2} \right) \left(\frac{125000 + 80000}{2} \right) \left(\frac{2000}{43560} \right) \left(\frac{1}{2} \right) = 200 \text{ AC-FT}$$

$$Q_{p2} = Q_p (1 - V_1/S) = 17000 \text{ CFS} \quad V_{\text{AVG}} = 188$$

$$V_2 = \left(\frac{4.4 + 4.0}{2} \right) (44) = 178 \text{ AC-FT}$$

$$Q_{p2} = Q_p (1 - V_{\text{AVG}}/S) = 18000 \text{ CFS} \quad \text{ELEV} = 160.0$$

$$\text{DEPTH} = 4.4$$

FULL SPILLWAY & BERTH = —

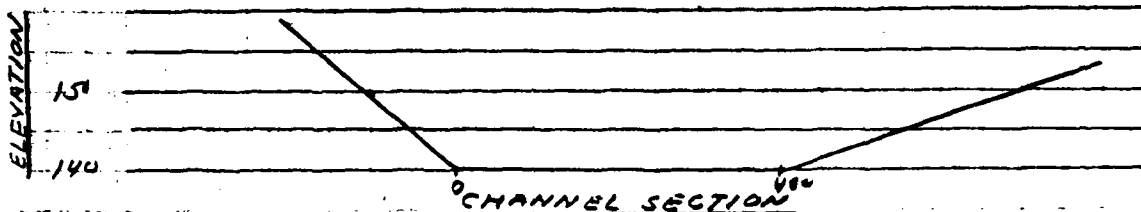
INCREASE DUE TO DAM FAILURE = 4.0

BY JL DATE 12/1/86 SUBJECT DAM INSPECTION STUDY SHEET NO. 80-100/07 OF 07
 CHKD. BY ERT DATE 2/10/87 DAM FAILURE ANALYSIS JOB NO. 80-100/07
PURCELL ASSOCIATES
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DAM TALCOTT RESERVOIR - DIVERSION DIKE

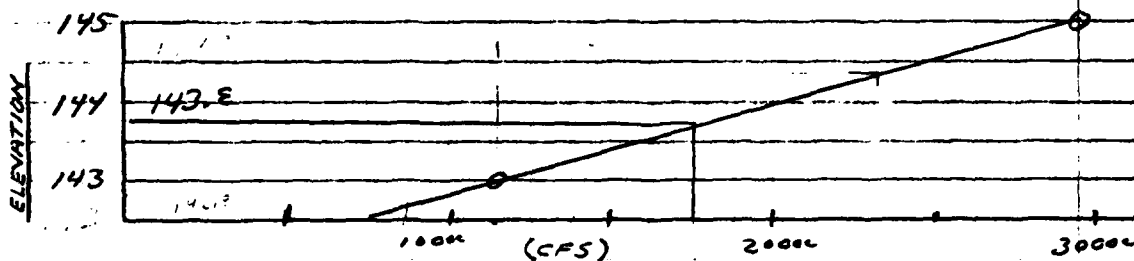
SECTION 15500' DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n = \underline{103}$ SLOPE (S_L) = .0086 %



$Q_P = \underline{18000}$ CFS FULL SPILLWAY $Q_S = \underline{45}$ CFS
 TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
145	2500	600	4.2	29000	5
143	1350	500	2.7	12000	3



$$V_1 = \left(\frac{4.0 + 3.8}{2} \right) \left(\frac{12500 + 11000}{2} \right) \left(\frac{4500}{43560} \right) \left(\frac{1}{2} \right) = \underline{337} \text{ AC-FT}$$

$$Q_{P2} = Q_P (1 - V_1/S) = \underline{11000} \text{ CFS} \quad V_{AVG} = \underline{311}$$

$$V_2 = \left(\frac{4.0 + 3.0}{2} \right) (84) = \underline{294} \text{ AC-FT}$$

$$Q_{P2} = Q_P (1 - V_{AVG}/S) = \underline{11000} \text{ CFS} \quad \text{ELEV} = \underline{143.0}$$

$$\text{DEPTH} = \underline{3.0}$$

FULL SPILLWAY 2 DEPTH = 3.0

INCREASE DUE TO DAM FAILURE = 3.0

Talcott Reservoir - Diversion Dike

A. Size Classification

Height of dam = 30.0 ft.; hence Small
Storage capacity at top of dam (elev. 458.0) = 1205 AC-FT.; hence Inter-mediate
Adopted size classification: Intermediate

B.i) Hazard Potential

The potential exists for the loss of more than a few lives
and excessive economic damage at numerous homes and buildings
in West Hartford.

Adopted hazard classification: High

ii) Impact of Failure of Dam with pool at Em. Spillway Crest.

It is estimated from the "rule of thumb" failure hydrograph, that the following adverse impacts are a possibility by the failure of this dam.

- a) Loss of homes 20+;
- b) Loss of buildings 10+;
- c) Loss of highways or roads 7;
- d) Loss of bridges 5;

The failure profile can affect a distance of 20000 feet from the dam.

C. Hazard Potential Classifications

<u>HAZARD</u>	<u>SIZE</u>	<u>TEST FLOOD RANGE</u>
<u>High</u>	<u>Intermediate</u>	<u>PMF</u>
Adopted Test Flood = <u>PMF</u>		= <u>2510</u> CSM
		= <u>4047</u> CFS

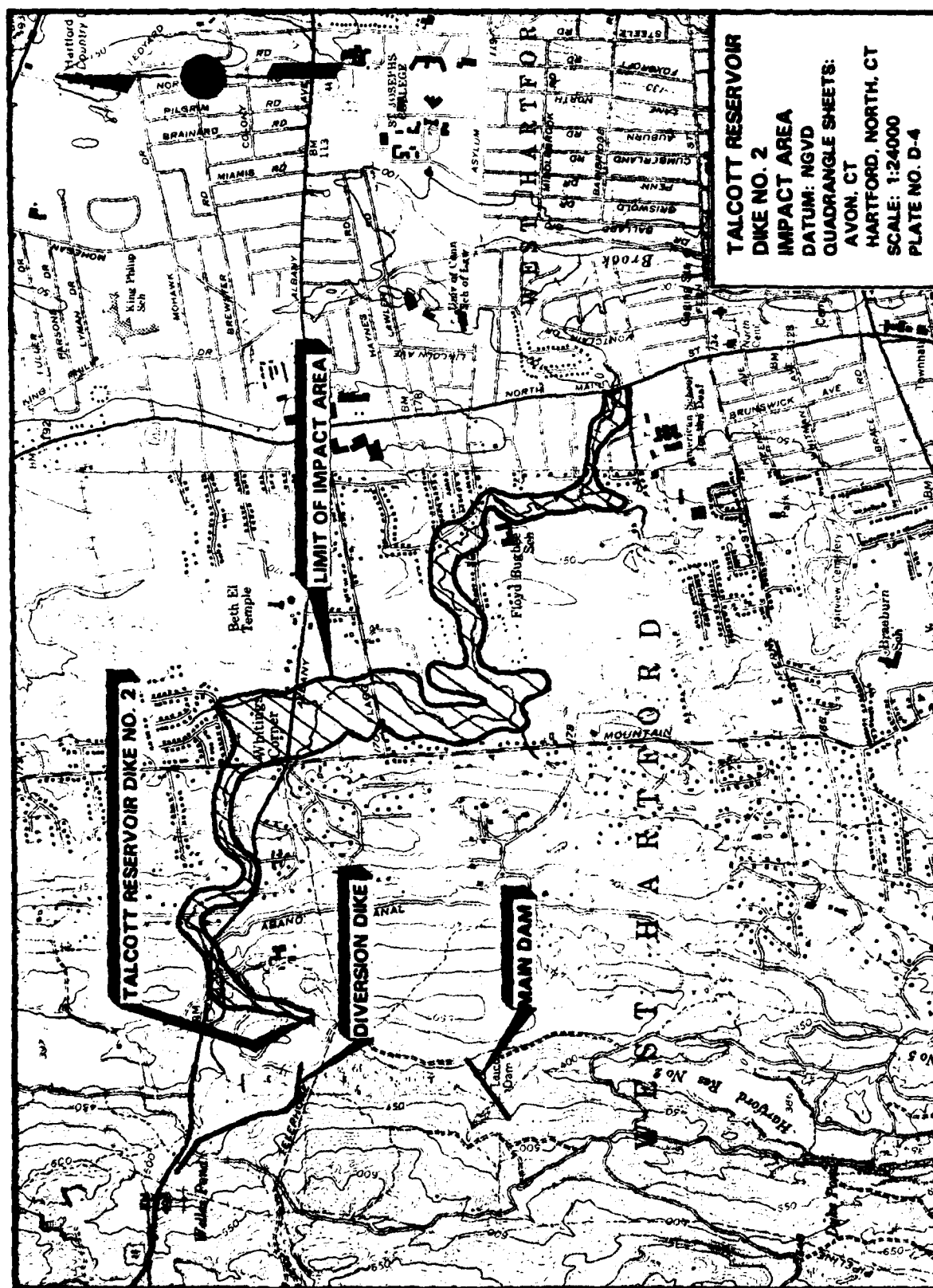
D. Overtopping Potential

Drainage Area 1030 acres = 1.61 sq. miles
Spillway crest elevation = 452.5
Top of Dam Elevation = 458.0

Maximum spillway discharge
Capacity without overtopping of dam = 5400 (Total Project) CFS
"test flood" inflow discharge = 4047 CFS
"test flood" outflow discharge = 2666 CFS

TALCOTT RESERVOIR

DIKE NO. 2



Talcott Reservoir - Dike No. 2

Dam Failure Analysis

1. Failure discharge with pool at Em. Spillway (elev. 452.5) = 4200 CFS
2. Depth of water in reservoir at time of failure = 13.5 ft.
3. Maximum depth of flow downstream of dam = 13± ft.
4. Water surface elevation just downstream)
of dam at time of failure) = 452±

The failure discharge of 4200 CFS will enter and flow downstream 19000 feet until the brook crosses North Main Street. Valley storage in this 19000 feet length of brook is not significant in reducing the discharge, and additional damage is likely downstream. The failure profile will have the following hydraulic characteristics:

DISTANCE FROM THE DAM	WATER SURFACE ELEVATION	DEPTH (ft.)	REMARKS
0	452.5	13.5	At Dike North Main Street
300	434.5	4.5	
4900	223.3	3.3	
9300	161.3	1.3	
14500	141.3	1.3	
19000	101.±	1±	

NOTES:

"Rule of Thumb" Guidance for Estimating
Downstream Dam Failure Analysis

DATA

Name of Dam Talcott Reservoir - Dike No. 2
Location West Hartford, Connecticut
Drainage Area 1.6 sq. mi., Top of Dam 458.0
Spillway Type None, Crest of Spillway 452.5 (Main Dam)
Surface Area @ Crest Elev. 65.7 Acres = 0.10 sq. mi.
Pool Bottom Near Dam = 439
Assumed Side Slopes of Embankments = 2H:1V
Depth of Pool at Dam (Y_o) = 13.5 Feet
Mid-Height Elev. 445.7
Length of Dam at Crest = 210 Feet
Length of Dam at Mid-Height = 125 Feet
40% of Dam Length at Mid-Height = W_b = 50 Feet

Step 1

Storage (S) at time of failure 826 Ac-FT

Step 2

$$\begin{aligned} &\text{Peak Failure Discharge} \\ &Q_{pl} = \frac{8}{27} W_b \sqrt{g} Y_o^{3/2} \\ &= (1.68) (W_b) (Y_o)^{3/2} = \underline{4200} \text{ cfs} \end{aligned}$$

Failure is assumed to coincide with pool elevation at Emergency Spillway
Crest of Main Dam.

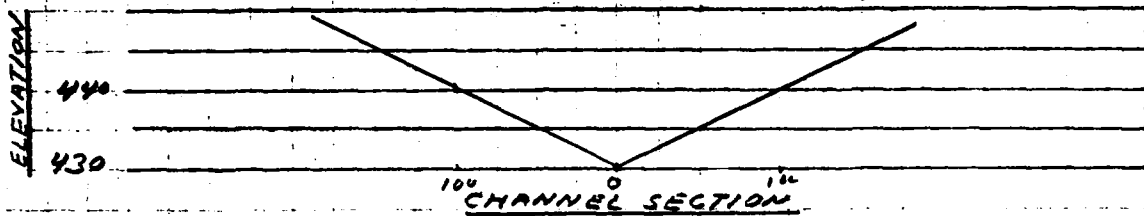
NOTES:

BY JL DATE 12/1/88 SUBJECT DAM INSPECTION STUDY SHEET NO. OF
 CHKD. BY ERT DATE 2/19/89 DAM FAILURE ANALYSIS JOB NO. 80-100/07
 PURCELL ASSOCIATES
 ENGINEERS • ARCHITECTS • PLANNERS

DAM TALCOTT RESERVOIR - DIKE NO. 2

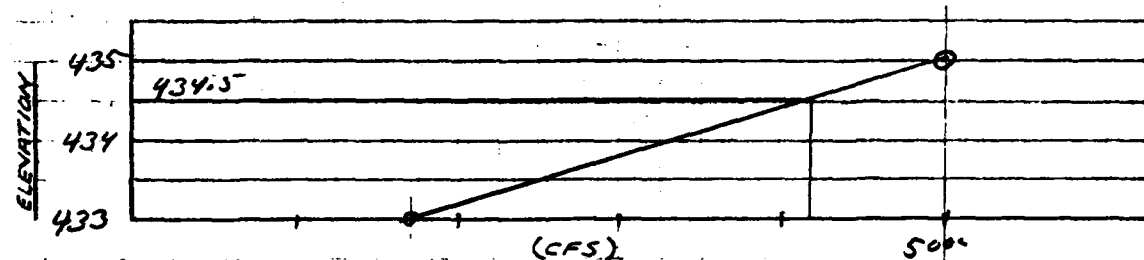
SECTION 300' DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n = .03$ SLOPE (S_L) = .05 $1/1$



$Q_P = 4200$ CFS FULL SPILLWAY $Q_S = 0$ CFS
 TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
440	1000	200	5	25000	10
435	250	100	2.5	5000	5
433	120	80	1.5	1700	3



$$V_1 = \left(\frac{135 + 4.5}{2} \right) \left(\frac{50}{1} + \frac{90+0}{2} \right) \left(\frac{300}{43560} \right) \left(\frac{1}{2} \right) = 3 \text{ AC-FT}$$

$$Q_{P2} = Q_P (1 - V_1/S) = 4200 \text{ CFS} \quad V_{AVG} = \text{---}$$

$$V_2 = \left(\frac{\text{---} + \text{---}}{2} \right) (.3) = \text{---} \text{ AC-FT}$$

$$Q_{P2} = Q_P (1 - V_{AVG}/S) = 4200 \text{ CFS} \quad \text{ELEV} = 434.5$$

$$\text{DEPTH} = 4.5$$

FULL SPILLWAY : DEPTH = 0

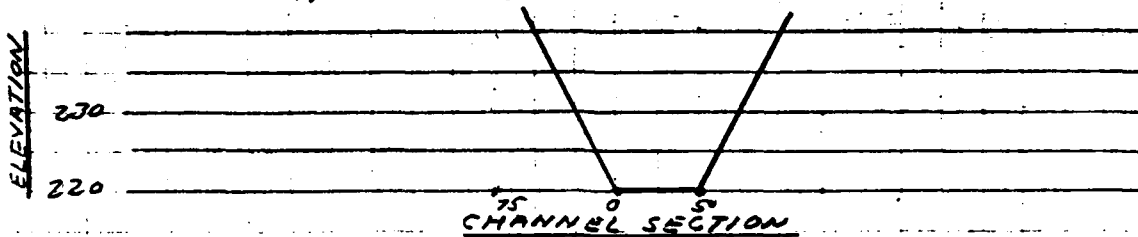
INCREASE DUE TO DAM FAILURE = 4.5

BY JR DATE 12/1/88 SUBJECT DAM INSPECTION STUDY SHEET NO. OF
 CHKD. BY ERT DATE 2/10/89 JOB NO. 80-100/07
DAM FAILURE ANALYSIS **PURCELL ASSOCIATES**
 ENGINEERS • ARCHITECTS • PLANNERS

DAM TALCOTT RESERVOIR - DIKE NO. 2

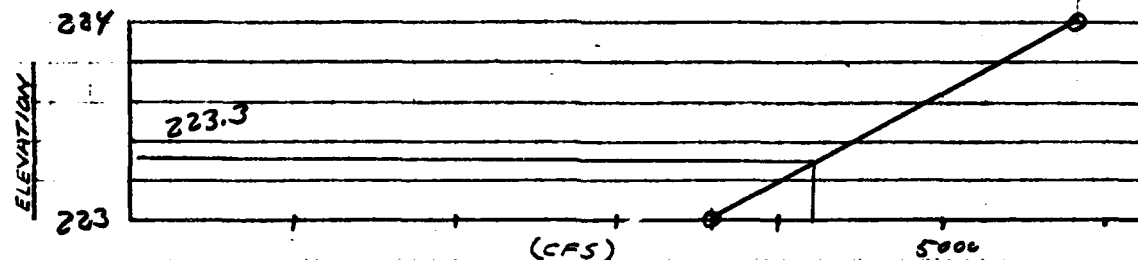
SECTION 4900' DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$ $n = .03$ SLOPE (S_L) = .05 $'/1'$



$Q_P = 4200$ CFS FULL SPILLWAY $Q_s = 0$ CFS
 TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
223	165	60	2.75	3600	3
224	220	60	3.7	5600	4



$$V_1 = \left(\frac{4.5 + 3.3}{2} \right) \left(\frac{90 + 0}{2} + \frac{60 + 50}{2} \right) \left(\frac{4600}{43560} \right) \left(\frac{1}{2} \right) = 21 \text{ AC-FT}$$


$$Q_{P2} = Q_P (1 - V_1/S) = 4100 \text{ CFS} \quad V_{AVE} = \text{---}$$

$$V_2 = \left(\frac{\text{---} + \text{---}}{2} \right) (5.2) = \text{---} \text{ AC-FT}$$

$$Q_{P2} = Q_P (1 - V_{AVE}/S) = 4100 \text{ CFS} \quad \text{ELEV} = 223.3$$

$$\text{DEPTH} = 3.3$$

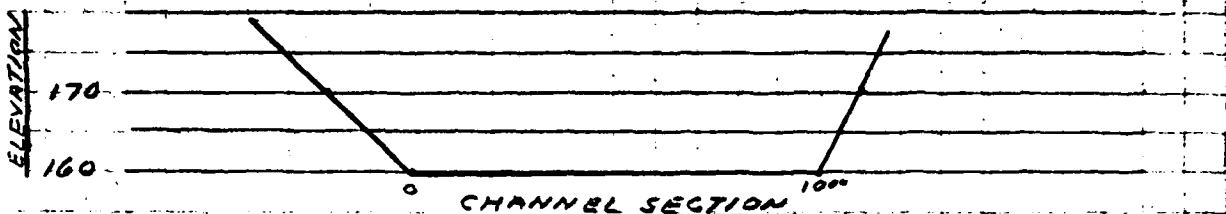
FULL SPILLWAY 3 DEPTH = 0
 INCREASE DUE TO DAM FAILURE = 3.3

BY JR DATE 12/4/81 SUBJECT DAM INSPECTION STUDY SHEET NO. 07
 CHKD. BY ERT DATE 2/10/81 JOB NO. 80-100/07
DAM FAILURE ANALYSIS  **PURCELL ASSOCIATES**
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DAM TALCOTT RESERVOIR - DIKE NO. 2

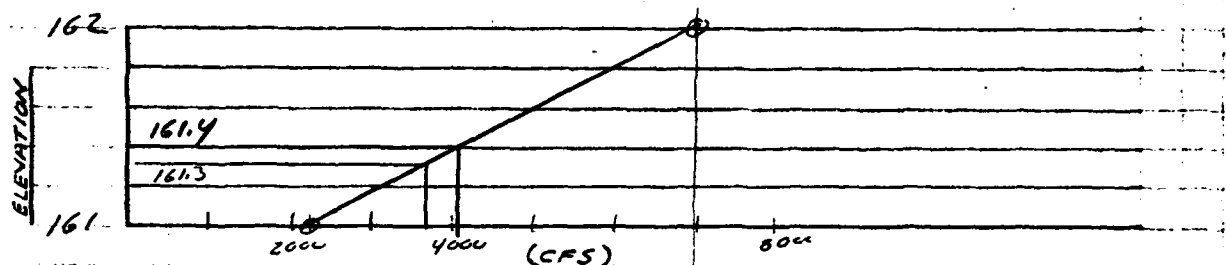
SECTION 9300' DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S_L^{1/2}$ $n = .03$ SLOPE (S_L) = .002 $1/1$



$Q_P = 4100$ CFS FULL SPILLWAY $Q_S = 0$ CFS
 TOTAL STORAGE (S) = 826 AC-FT

ELEV	AREA	WP	R	Q	DEPTH
161	1000	1000	1	2200	1
162	2000	1000	2	7000	2



$$V_1 = \left(\frac{3.3 + 1.4}{2} \right) \left(\frac{60750 + 1000}{2} \right) \left(\frac{4400}{43560} \right) \left(\frac{1}{2} \right) = 78 \text{ AC-FT}$$

$$Q_{P_2} = Q_P (1 - V_1/S) = 3700 \text{ CFS} \quad V_{AVE} = 69$$

$$V_2 = \left(\frac{3.3 + 1.3}{2} \right) (26) = 60 \text{ AC-FT}$$

$$Q_{P_2} = Q_P (1 - V_{AVE}/S) = 3800 \text{ CFS} \quad \text{ELEV} = 161.3$$

$$\text{DEPTH} = 1.3$$

FULL SPILLWAY DEPTH = 0

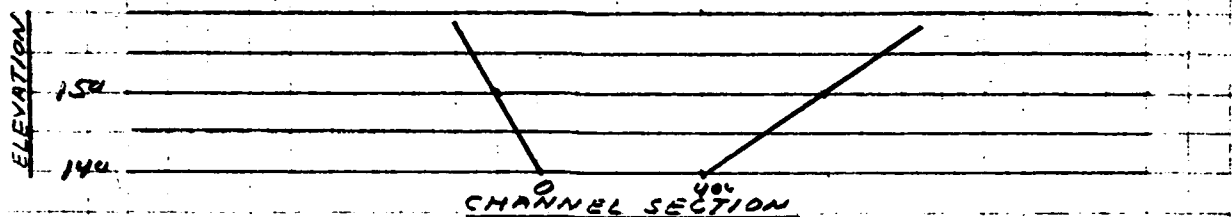
INCREASE DUE TO DAM FAILURE = 1.3

BY JR DATE 12/1/88 SUBJECT DAM INSPECTION STUDY SHEET NO. OF
 CHKD. BY ERT DATE 2/10/89 DAM FAILURE ANALYSIS JOB NO. 80-100/07
 PURCELL ASSOCIATES
 ENGINEERS - ARCHITECTS - PLANNERS

DAM TALCOTT RESERVOIR DAM - DIKE NO. 2

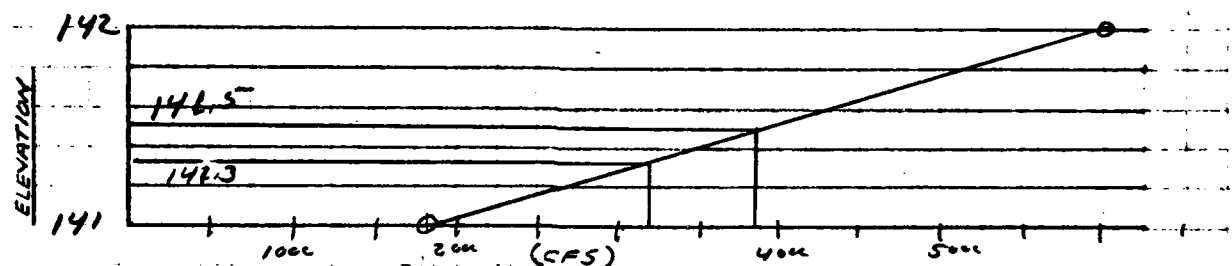
SECTION 14500' DOWNSTREAM

USING $Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$ $n = \underline{1.03}$ SLOPE $(S) = \underline{.0086 \text{ 1/1}}$



$Q_p = \underline{3800}$ CFS FULL SPILLWAY $Q_s = \underline{0}$ CFS
 TOTAL STORAGE $(S) = \underline{826}$ AC-FT

ELEV	AREA	WP	R	Q	DEPTH
142	850	450	1.9	6000	2
141	400	400	1	1800	1



$$V_1 = \left(\frac{1.4 + 1.5}{2} \right) \left(\frac{1000}{1} + \frac{4000}{1} \right) \left(\frac{5200}{43560} \right) \left(\frac{1}{2} \right) = \underline{121} \text{ AC-FT}$$

$$Q_{P2} = Q_p (1 - V_1/S) = \underline{3200} \text{ CFS} \quad V_{AVG} = \underline{117}$$

$$V_2 = \left(\frac{1.4 + 1.3}{2} \right) (83) = \underline{112} \text{ AC-FT}$$

$$Q_{P2} = Q_p (1 - V_{AVG}/S) = \underline{3300} \text{ CFS} \quad \text{ELEV} = \underline{141.3}$$

$$\text{DEPTH} = \underline{1.3}$$

FULL SPILLWAY DEPTH = 0

INCREASE DUE TO DAM FAILURE = 1.3

Talcott Reservoir - Dike No. 2

A. Size Classification

Height of dam = 18.5 ft.; hence Small Inter-
 Storage capacity at top of dam (elev. 458.0) = 1205 AC-FT.; hence mediate
 Adopted size classification: Intermediate

B.i) Hazard Potential

The potential exists for the loss of more than a few lives
and excessive economic damage to numerous homes and buildings
in West Hartford.

Adopted hazard classification: High

ii) Impact of Failure of Dam with pool at Em. Spillway Crest.

It is estimated from the "rule of thumb" failure hydrograph, that the following adverse impacts are a possibility by the failure of this dam.

- a) Loss of homes 20+;
- b) Loss of buildings 10+;
- c) Loss of highways or roads 9;
- d) Loss of bridges 7;

The failure profile can affect a distance of 19000 feet from the dam.

C. Hazard Potential Classifications

<u>HAZARD</u>	<u>SIZE</u>	<u>TEST FLOOD RANGE</u>
<u>High</u>	<u>Intermediate</u>	<u>PMF</u>
Adopted Test Flood =	<u>PMF</u>	= <u>2510</u> CSM
		= <u>4047</u> CFS

D. Overtopping Potential

Drainage Area 1030 acres = 1.61 sq. miles

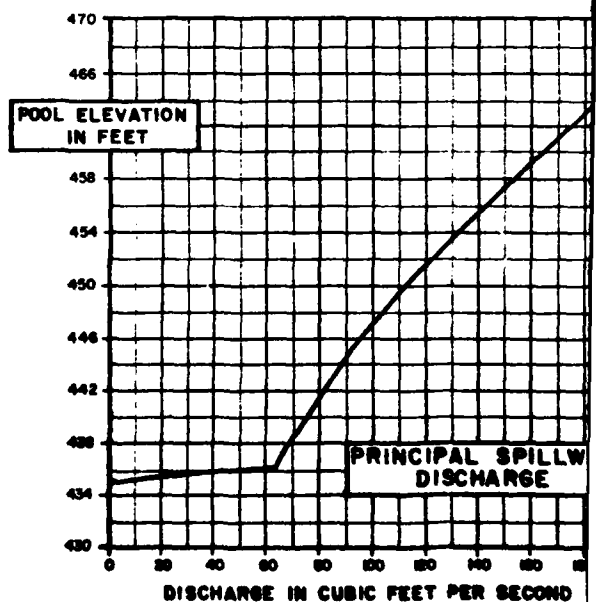
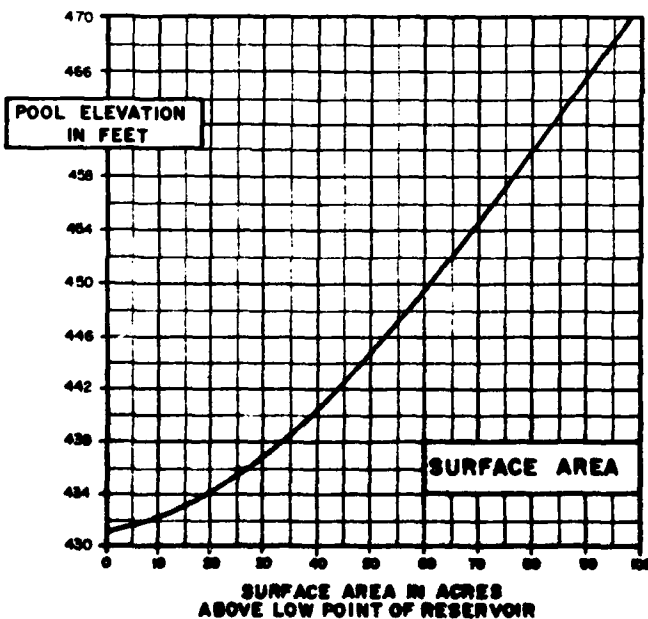
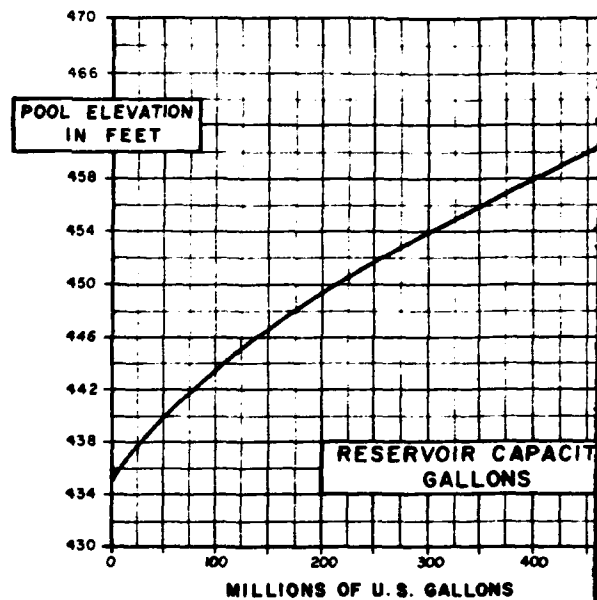
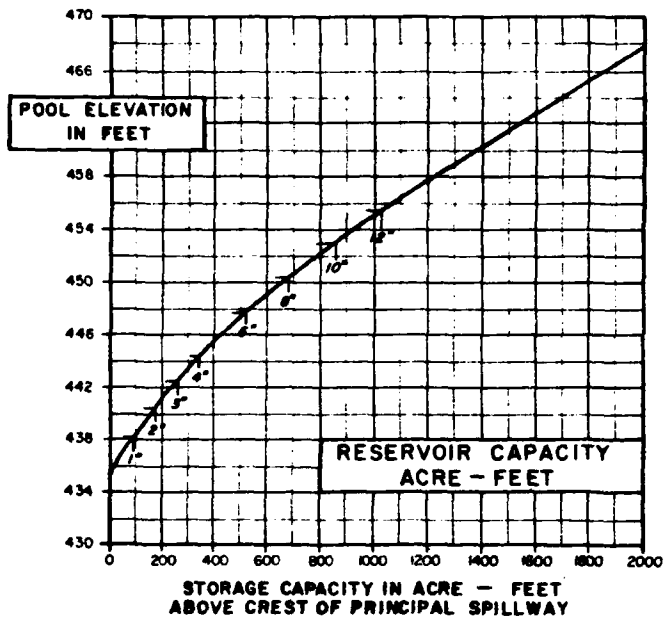
Spillway crest elevation = N/A

Top of Dam Elevation = 458.0

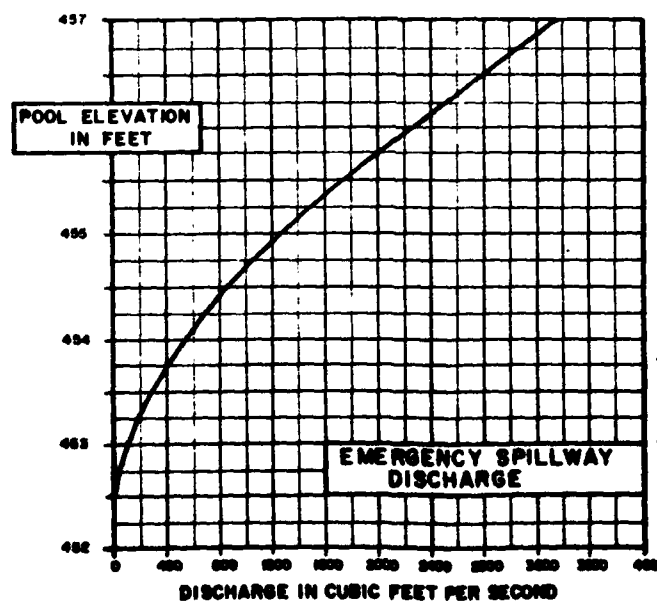
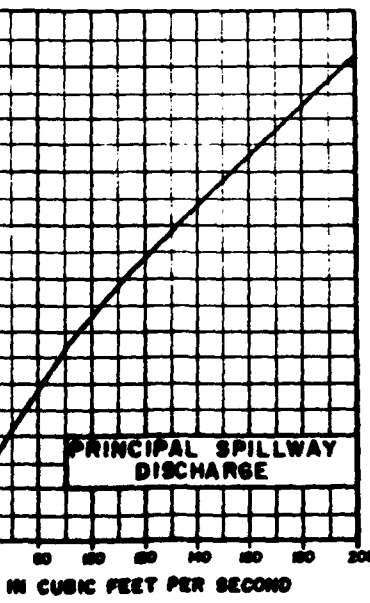
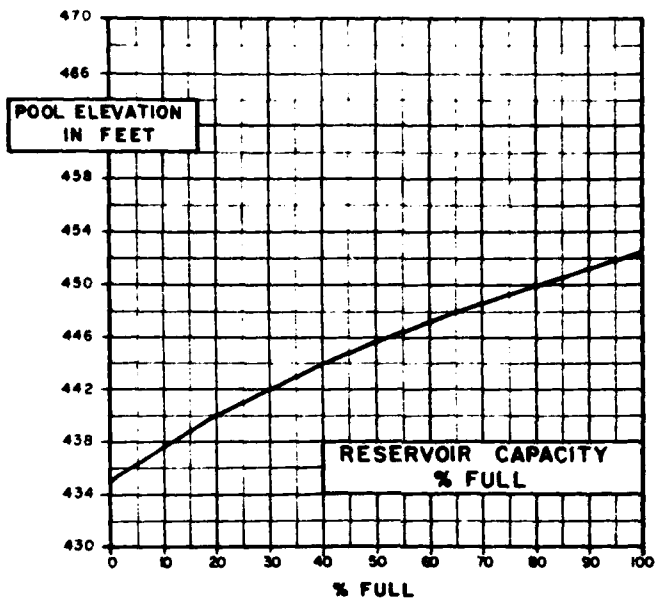
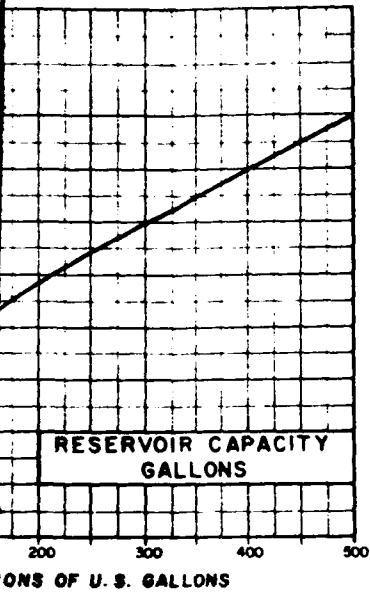
Maximum spillway discharge

Capacity without overtopping of dam = N/A CFS
 "test flood" inflow discharge = N/A CFS
 "test flood" outflow discharge = N/A CFS

RESERVOIR OPERATING CURVES TALCOTT RESERVOIR - HART MEADOW BROOK - SC



R OPERATION DATA OW BROOK - SOUTH BRANCH PARK RIVER WATERSHED



PERTINENT DATA

TOP OF DAM EL. 458.0
 DESIGN HIGH WATER EL. 455.4
 CREST EMERGENCY SPILLWAY EL. 452.5
 CREST PRINCIPAL SPILLWAY EL. 435.0
 INVERT LOW FLOW ORIFICE EL. 431.0
 DRAINAGE AREA CONTROLLED 1.61 SQ. MI
 1" OF RUNOFF = 86.86 ACRE-Feet
 ALL ELEVATIONS REFER TO METROPOLITAN DISTRICT DATUM

CONSTRUCTED BY:
 STATE OF CONNECTICUT
 DEPARTMENT OF AGRICULTURE &
 NATURAL RESOURCES
 JOSEPH H. GILL, COMMISSIONER

IN ASSOCIATION WITH THE:
 U.S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 PUBLIC LAW 808 FUNDS

DESIGNED BY:
 U.S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE

STATUS:
 COMPLETED AUGUST 11, 1964

Anderson-McIntosh Associates February 1967

2

APPENDIX E

**INFORMATION AS CONTAINED IN THE
NATIONAL INVENTORY OF DAMS**

NOT AVAILABLE AT THIS TIME

END

DATE
FILMED

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